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PCWORLD

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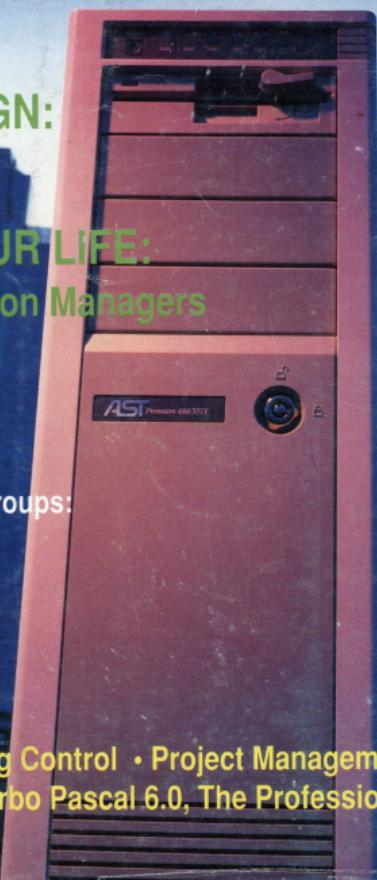
THE NEED FOR SPEED — 33MHz 486 COMPUTERS COMPARED

WINDOWS REIGN:

Is OS/2 Dead?

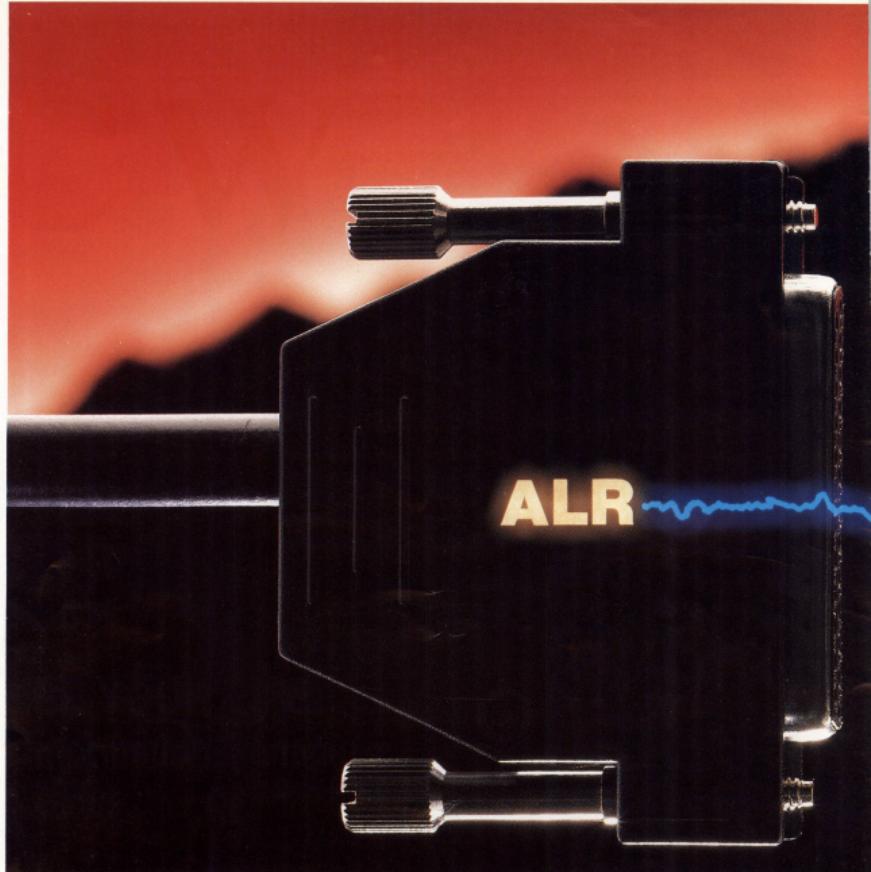
ORGANISE YOUR LIFE:

Personal Information Managers



- NEW IBM baby laptop
- Enhanced e-mail for groups:
Lotus Notes 2.0
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a major upgrade

- Networking: Token Ring Control
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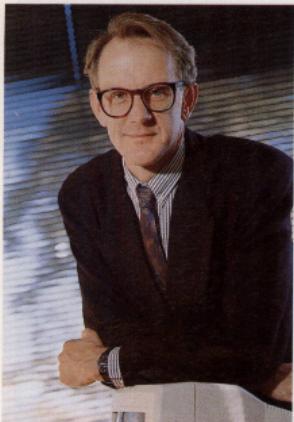
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New activity for electronic mail

Since the introduction of Windows 3.0 twelve months ago we have witnessed a change in the way we approach personal computing. The next wave could well be towards multimedia, or pen-based computing, or a big move away from the desktop towards notebook computers — or all of these. One thing is for sure, if you leave out electronic mail in your calculations for the future, you may get left behind in the rush.

Electronic mail has been around for years — it is not new at all. It has generally been well accepted in organisations that have adopted its use, and the number of people using e-mail is growing continually.

However, there are still vast numbers of PC users who do not have access to a good e-mail system. This could soon change, especially since some large players in the software market are working hard at getting new enhanced e-mail products ready for release.

Microsoft has been active in the Macintosh mail market with Microsoft Mail, but has been notably absent up until now in the PC market. The software giant in the US has taken over the assets of Consumers Software, maker of The Network Courier e-mail package, which has versions for DOS, OS/2, Windows and Macintosh networks. Microsoft is expected to release a new Windows version of The Network Courier under its own label any day now.

Microsoft's strategy is to then broaden the technology to perform other functions in "mail enabled" applications: In other words, applications such as word processors, spreadsheets and databases will have an electronic mail function built-in. The simple messaging function of electronic mail will be enhanced with a store and forward mechanism for

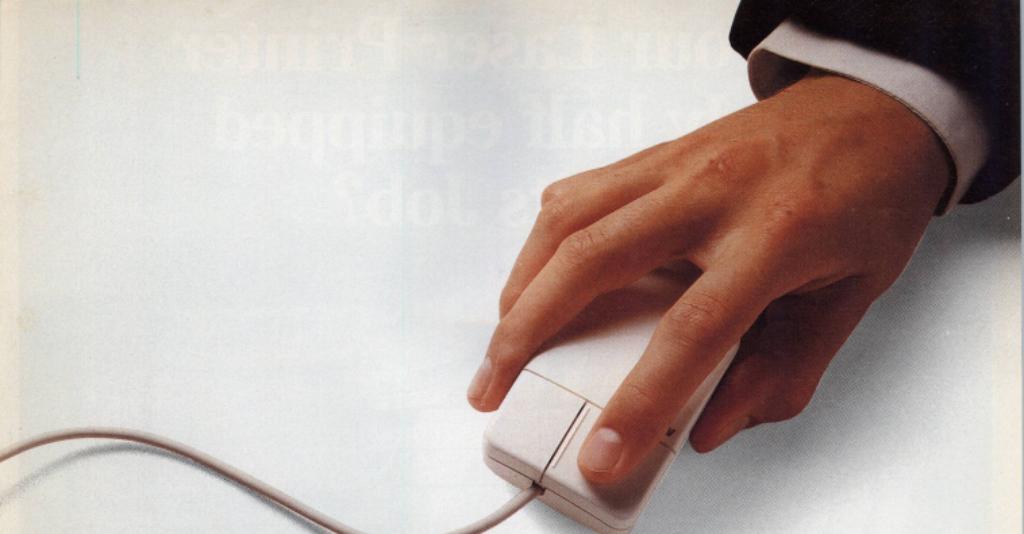
moving objects (files, embedded spreadsheets, graphics, faxes) between systems.

Lotus is also moving rapidly, having recently acquired cc:Mail in the US. Lotus has already been testing the waters with its Notes communications package for groups. By the time you read this, Notes, version 2.0 will have been released. This software is Windows-based and is compatible with networks: It is much more than simple e-mail, with the ability to create databases and query "views" online. Windows DDE (Dynamic Data Exchange) and OLE (Object Linking and Embedding) is supported, which will make it that much easier to automate tasks such as the monthly filing of expense reports from interstate offices.

Other players include WordPerfect, with WordPerfect Office, and Software Publishing Corporation with its recently released Professional Write Plus, a Windows word processor with a built-in electronic mail interface.

The move to e-mail is no stab in the dark by any of these companies: IDC predicts the world's 3.7 million LAN e-mail boxes will grow to 47 million by 1995. This predicted growth will be pushed along by the communications revolution with more efficient gateways between different operating systems and networks, expansion of ISDN and X.400 messaging, and handy hardware such as portable radio-based phone attachments for notebook computers.

R. Thirkell



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TOP OF THE NEWS

Borland ships Quattro Pro 3.0

Borland is shipping Quattro Pro 3.0, a major upgrade to the PC spreadsheet. Quattro Pro was developed in response to users' requests for the productivity benefits of a Wysiwyg environment. This graphics environment is tightly integrated with spreadsheet and presentation functionality on the DOS platform. Quattro Pro will be offered for \$750. Registered owners of version 1.0 can upgrade for \$150, users of version 2.0 for \$75. The Quattro Pro LAN Pack, which adds one additional user to the network will retail for \$595.

IBM to upgrade AS/400 range with 11 models

IBM is expected to launch 11 new models — D04, D06, D10, D20, D25, D35, D45, D50, D60, D70, D80 — in its AS/400 family, according to industry sources. The new systems are also expected to be accompanied by new software, communication products, a new version of the OS/400 operating system that can run on a dual-processor machine and a communications card via a token-ring network that will offer a performance two times more powerful than what is offered today. The open systems strategy is expected to be supported via an OSI-based communications card. On the hardware side, the high- and low-end models will undergo the most change.

Intel's 20MHz i486 chip may jumpstart 486 market

Intel Corp.'s soon to be released 20MHz low-end i486 microprocessor, may offer enough of a price/performance value to finally draw significant numbers of users to the 486 processor family, a sluggish seller so far. With system announcements expected to follow hot on the heels of the chip's release date, some users are eager for an SX-like 486-based system they can cost-justify for desktop use, but others wonder how they will use the power. Analysts said most major vendors and many smaller ones will introduce 486SX-based boxes within two weeks of Intel's chip announcement.

IBM, NEC unveil 32-bit notebook PCs in Japan

IBM and NEC recently introduced new notebook personal computers in Japan. IBM unveiled its first notebook, the PS/55 Note, while NEC came out with the RC-9801, the world's first notebook with a built-in wireless modem. The PS/55 Note is optimised for IBM's DOS/V operating system and Windows 3.0. It has a 12MHz Intel-based 386SX CPU and 2Mb of standard RAM. The notebook's hard drive model has 40Mb of storage capacity. NEC's RC-9801 weighs in at 3kg with a built-in wireless modem and is relatively light compared with the company's 386SX-based PC-9801NS.

Mac-to-mainframe token-ring adaptor

Digital Communications Associates (DCA) has introduced a token-ring adaptor card that gives Apple Macintoshes access to IBM mainframes over a local-area network. DCA's MacIRMAtrac token-ring card was designed to link Macintosh II personal computers into a 4Mbps/sec token-ring LAN. The network must support AppleTalk networking protocols or use an operating system that supports the protocols, such as Novell's NetWare. Macintoshes equipped with the new adaptor and DCA client software will be able to access a mainframe through a single, LAN-attached personal computer equipped with a gateway. Previously, each Macintosh had to support a gateway and a coaxial-cable connection to a cluster controller providing access to the mainframe.

TOP OF THE NEWS

IBM revenue down on last year

IBM has reported a worldwide decline in revenues and earnings for the first quarter of 1991. Placing blame on the worldwide economic slowdown and uncertain business environment IBM's worldwide revenue was \$13.5 billion, down 4.5 per cent from the previous year. IBM Chairman John Akers, however, feels confident IBM will bounce back: "The strength of our product line and the actions we have taken to improve our efficiencies place us in an excellent position to take advantage of any economic improvement," Akers said. IBM does not believe its recently announced restructuring actions had any impact on the first-quarter operational results.

BSAA launches Software Audit program

The Business Software Association of Australia (BSAA) has launched a Software Compliance and Audit Manual designed to assist organisations in monitoring and controlling computer software holdings. The program gives users a list of all programs on the hard disk and can also run on a network. The manual includes printed step-by-step guidelines and forms for conducting an audit of software and a copy of a program on disk which will recognise 650 popular applications. The BSAA Software Compliance and Audit Manual is available for \$95.

Microsoft Excel 3.0 for Mac with object linking due

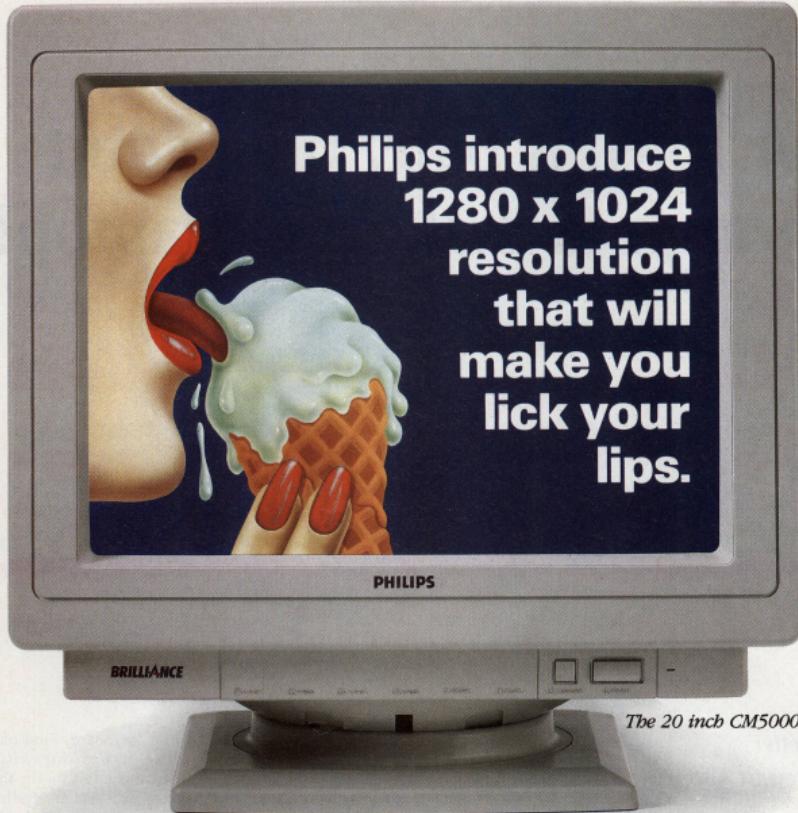
Microsoft Excel 3.0 for the Macintosh should ship this month, according to beta testers and company officials, who say the beta release is solid. Microsoft is working on some last-minute bug fixes, but the program should ship in late April or early May, said Hank Vigil, group product manager for Microsoft in the US. Microsoft has succeeded in narrowing the features gap between the Mac and PC applications, testers of the Windows and Mac iterations said. Such parity makes life easier for developers working on and for multiple platforms. Also extending the Mac version's parity with the Windows and OS/2 versions is Microsoft's Object Linking and Embedding (OLE) technology, which will run on top of Apple's System 7.

Multimedia version of dBase expected

A multimedia version of dBase is on the cards, following Ashton-Tate's buy-out of relational database company Interbase, Ashton-Tate managing director Paul Sloane said last week. Sloane denied that the Interbase and dBase products would merge, but said Ashton-Tate would use Interbase's mini and workstation experience and its multimedia technology to launch a challenge to Ashton-Tate's big three competitors in the field — Ingres, Informix and Oracle. The Interbase relational database management system runs on DEC, Hewlett-Packard, IBM and Sun Microsystems machines.

Novell to offer big picture Network view

Novell is developing a centralised network management system that will give network managers a "big picture view" of objects such as servers, workstations, and bridges throughout a NetWare network, according to developers who have seen a demonstration of the prototype. The system will also manage third-party NetWare Loadable Modules (NLMs), developers said. At its recent developers conference, Novell demonstrated an OS/2 Presentation Manager application that provides a graphical map of the network. By clicking on an object, such as a file server, managers can see configuration information, attendees said.



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For IBM, is baby blue good enough to make a hit laptop?



PC Letter
by Stewart Alsop

Last week, IBM formally introduced its new laptop computer. The question of the moment is: Can this new machine finally give IBM a piece of the action in the fast-moving laptop computer market?

The PS/2 L40SX (sexy name, what?) is a hot little box. It goes at 20MHz. It comes with 2Mb of memory and a 60Mb hard disk. It's got a great screen and a killer keyboard. It's battery powered. And it "only" weighs 3.6kg and costs \$9,300 (including tax).

Last October, Compaq introduced a computer called the LTE 386s/20. It goes at 20MHz. It comes with 2Mb of memory and a 60Mb hard disk. It's got an okay screen and an okay keyboard. It's battery powered. And it "only" weighs 3.4kg and costs about \$10,746 (including tax).

So the difference between these two machines is that IBM's was introduced five months later than Compaq's, is a little bit cheaper, and

has a better keyboard. First of all, I can't quite figure out why the columnists and analysts (in the US trade press, at least) are falling all over themselves to say nice things about IBM's laptop computer. Is there a sense of relief that IBM has finally managed to be only six months late to the game, instead of missing it entirely? Or is it that Microsoft has done such a completely nasty job to IBM that the industry now wants to sympathise with the company? Or is it even that IBM's laptop project was managed by a lady executive, Kathy Vieth, who is personable, smart, knowledgeable, and attractive, which are such rare qualities in senior IBM executives?

The problem is that the PS/2 L40SX is clearly just good enough to satisfy the most hidebound IBM shops. And good enough once sufficed for IBM. Once upon a time it was acceptable for IBM to watch what other companies did and then introduce products that did the same

thing a little bit better. But that doesn't work in the PC business, as has been shown time and again with IBM's own, repeated efforts to build smaller, more mobile computers.

IBM's first such computer, the Portable PC, was introduced in 1984, about a year after Compaq introduced its original Portable. IBM's Portable PC had the same basic properties of the Compaq Portable, but happened to weigh 3.6kg more. Good enough (in IBM's mind), but customers didn't buy it.

IBM's second such computer, the PC Convertible, was introduced in 1986. It had similar properties to the Toshiba T1100, with which it was intended to compete, but it was slower and weighed over a kilogram more. Good enough (in IBM's mind), but again customers didn't buy it.

Third time lucky

IBM's third such computer, the PS/2 P70, was introduced in 1989. This time, IBM didn't try to get into the lightest, cheapest category and instead just tried to establish that it could build a powerful computer that could be lugged around. On that score, the company succeeded. The P70 has been a minor success, in the sense that customers that really insisted on an IBM product had a reasonably powerful computer that

they could move around (even if it had the ugliest industrial design of an entire product line that's not the slickest you've ever seen).

So that brings us to IBM's fourth attempt at making a portable computer. This time, IBM's computer is about the same weight as the Compaq LTE, has the same performance characteristics, and features a better keyboard. In other words, IBM has reached a major milestone — it has actually produced a computer that's as good as, or maybe even a little better than, the competition's. Is that good enough?

The way the laptop business has worked, I don't think so. Essentially, the laptop business has become one where the company that manages to figure out the newest paradigm is the winner and everybody else loses. Compaq was first to market with a portable computer in 1983 and it dominated that business for years. Zenith and Toshiba were first to market (at about the same time) with laptop computers in 1986 and they dominated that business for years. And Compaq was once again first to market with an acceptable definition of the notebook computer last year — it seems certain to continue dominating that market for the next few years.

So the way to break into the

portable computer business, whether you're IBM or Compaq or Toshiba, is to be the first company to match the current technology with the customer's perception of what a no-compromise computer is — at the time that the technology allows you to deliver that computer to market in the smallest possible configuration. IBM took about four months — from the original introduction schedule for the PS/2 L405X — just to figure out where to get enough hard disks to meet its anticipated demand for the machine.

A conundrum

Here's the conundrum: when the machine was supposed to have been introduced, it probably would have had enough demand to outpace IBM's ability to buy hard disks. But, because it waited four months to get that supply, IBM probably lost the opportunity to be considered a leader. So the demand that the company originally anticipated probably won't develop. And, in another two or three months, you'll see Compaq or Toshiba or maybe even an entirely different company introduce a whole new paradigm. And by this time next year, you won't even be able to remember what it was that IBM called their fourth portable computer. ■

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Software lacks capability of hardware

By Jason Gregg

It's really possible to build the perfect computer, one that has zero defects and runs on forever without needing anything more than routine maintenance? Probably not, because anyone who has ever thought about how computers work must still wonder that they ever work at all . . . those billions of electrons whirling around micro circuits, tiny transistors trafficking their pathways through thousands of capacitors and resistors as they gather and retrieve information from discretely magnetised locations on a spinning circle of metal filings.

Why is it that software lags behind the capability and intelligence of advanced hardware? Are we expecting too little from the manufacturers of software?

After years of using and writing about computers, I am still in awe of their technology, their intelligence, their reliability to perform tasks over and over again without complaint, without asking for more and rarely, if ever, failing in their mission. On the other hand, I often find myself in equal wonder that, in contrast, most computer software available today seems so unevolved, so linear in its design, so immature in its function, so lacking in the elements of intelligence, reliability and capability that is inherent in today's hardware.

When the first personal computers came to market, disk storage, processor speed, price and, of course, lack of market experience precluded software developers from creating the kinds of function-rich applications that we routinely expect today. Today's word processor, spreadsheet and database packages are a quantum leap from the first cassette loading wimpware that enabled our TRS80s and Apple toys of a decade ago.

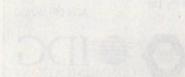
But in spite of where we came from and where we are today, are we expecting too little from software

manufacturers? Living in a time when a 40Mb drive and double-digit processor speeds are commonplace, when artificial intelligence and intuitive and expert programming are out of the lab and happily living in the real world, why am I still having trouble remembering the command set for my favourite word processor?

In fact, why should I have to remember it at all? Isn't that one of the things we use computers for? And can someone please tell me why I have all these manuals? Why can't the instructions be stored within the application, accessed on demand through hypertext or automatically offered on screen when it senses that I persist in making the same mistake? And why do I need a keyboard template? I seem to get by driving my car without the operating manual on the seat beside me; why do I have to search for the manual each infrequent time I need to use a spreadsheet?

It seems that the hardware manufacturers quickly realised the advantages of primary architectures, for buses, for ports and for storage media. So why don't the software manufacturers agree upon a common instruction set for application commands? I can never remember if it is "control A" or "alt A" and I'm tired of playing this dumb game of "find the function". Just because commands follow an industry protocol, it doesn't necessarily mean that all software ends up the same in function and features.

And more importantly than all this, why does it seem that just when I learn to use the current version, the new and improved version is released? Sounds like a case of planned obsolescence to me. ■



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A company talking Windows

By Monique Haylen



Corporate WorkGroup Resources started as a training and consulting firm. Set up by Peter Watson and Tony Lee in 1988, the company experienced a major turn around in 1989. Peter Herman, the original author of Talking Windows, joined with the founders to focus on being a software development house. Currently they employ 22 software consultants and programmers along with a small team of administration and marketing staff. The company has given birth to several innovative products.

Talking Windows is a uniquely Australian product, developed by Corporate WorkGroup Resources, with international potential. It is a Windows-based telecommunications package that combines the simplicity of the standard Windows environment with Dynamic Data Exchange (DDE), allowing applications to talk to each other as they operate.

CWR's aim is to expand the functionality of the computer and related on-line databases through integrating them with other existing systems. They achieve this through their Talking Windows family of products and provide businesses with the

opportunity to use a wealth of information from the variety of public and private on-line data services.

First released in February 1990, Talking Windows has plunged into the Windows market and received encouragement and assistance from Austrade. This encouragement provided the stepping stone for the company to enter the overseas market.

ASSISTED BY AUSTRADE

Austrade encouraged and assisted financially for CWR to exhibit Talking Windows in the United Kingdom. Watson, managing director of CWR said the exposure in the UK, "opened many doors for us and Austrade's help proved invaluable". One of the most significant outcomes of being in the UK was meeting with SoftKlone Pty Ltd. This company is now the exclusive distributor of Talking Windows in the UK.

In Australia, Talking Windows has been adapted for specific communications environments. It has been tailored to the needs of individual organisations. Rather than create a product to try and suit the varying needs of companies in a large mar-

ket, CWR allows companies to approach them and tell them what they want. A package is then built around a base model.

CWR has financed some areas of development on their own and others have been financed in partnership with the client company. CWR worked closely with Telecom while developing Talking Windows to enhance the product and facilitate easy use with the Discovery on-line service (originally Viatel).

Westpac Windows — a new product — was jointly developed by CWR and Westpac to work with the Westpac HandyLine service. Watson said the product is to be released soon and is jointly owned by the two companies.

Other developments have been occurring besides those related to the Talking Windows package. County NatWest has been working with CWR to build an application platform to tie open systems together. This product is expected to create as much interest as Talking Windows, and is due for release later in the year.

CWR appears to be breaking into the overseas market yet lacks a strong marketing objective or advertising campaign. Watson however appears confident about the future success of CWR. He tells us, "the next six months will see CWR really focusing on the international market, particularly the US, Europe and South-East Asia".

CWR has the means to capitalise on the Windows revolution and continue to grow, both locally and internationally. However, its success will depend upon it finding a strong marketing objective.

Failure to do this may see another Australian company fall from the shelves of international competitiveness and be swallowed up by an overseas company hungry for an innovative product, no doubt giving it the advertising and market-

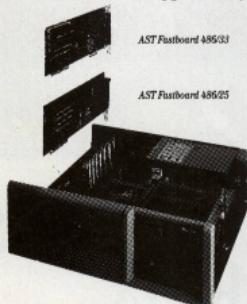
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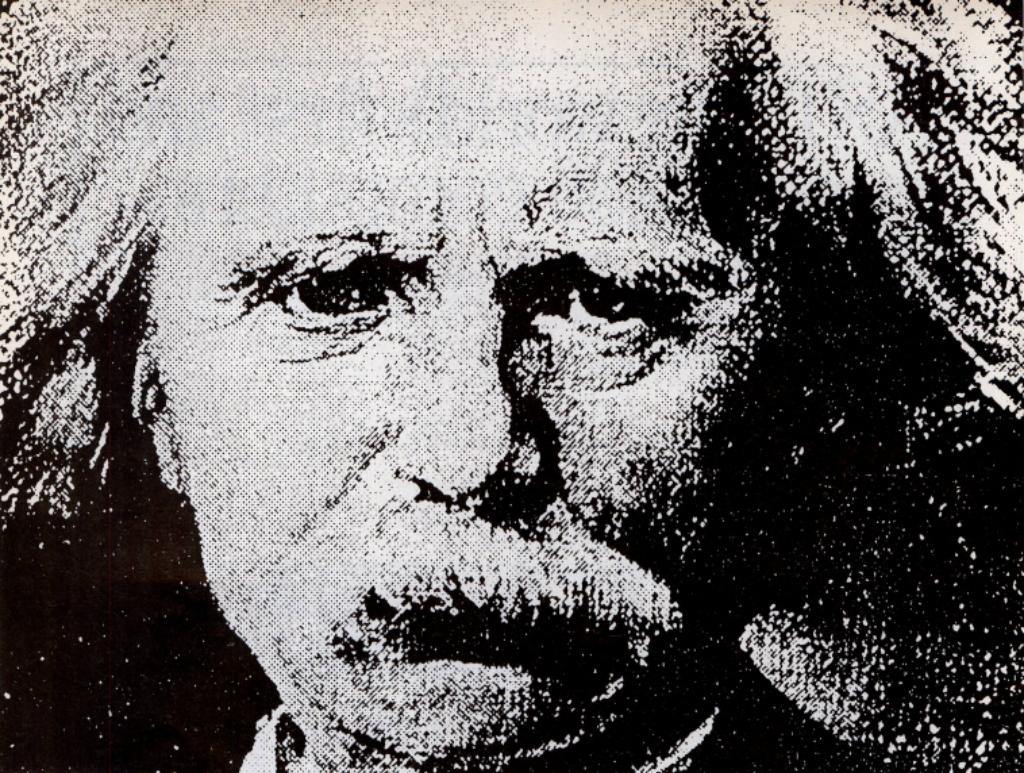
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**PC
EXTRAS**

Apple's System 7 maintains ease of use

By Michael Miller

Although it's been a long time coming, now that Apple's Macintosh System 7 is approaching completion, it's getting easier to see why it has gotten so much attention.

Recently, I had a chance to work with a copy of Beta 4 of the new operating system obtained by PC World. Although the final version of the system isn't expected to be released until mid May, the version I used showed that not only does System 7 have lots of new features, it maintains and even enhances the ease of use that Mac users have come to expect.

In many respects, System 7 is the largest change to the Mac system software since the Mac was introduced seven years ago.

The biggest addition is Inter-application Communication (IAC), which will allow applications written to the IAC toolkit to more easily share information, such as having charts in word processing documents automatically updated when a spreadsheet changes. In most respects, this is analogous to the Dynamic Data Exchange (DDE) feature in Windows, although it offers users more control, such as the capability to set which applications should be "published" so their data can be shared with other applications.

The concept of sharing information about applications is crucial, and developers are extremely enthusiastic about IAC. However, users will have to wait to see applications designed to take advantage of it.

System 7 also incorporates the

32-bit colour extensions that Apple released several years ago, as well as the TrueType font manager. The operating system is extensible, so you can easily add or replace things such as Apple's Data Access Language (DAL) tools or various network extensions, both of which come with System 7.

System 7 offers enhancements to the Mac user interface. Like Windows, it now lets you have colour icons, and features such as scroll bars and close boxes now have a three-dimensional look. One terrific new feature is a menu called Balloons, which, when turned on, shows a "balloon" (like a thought balloon in a comic book) attached to the part of the user interface where the mouse is positioned. This is a great way of helping new users learn how to use a Macintosh.

For organising your work in the Finder (the Mac's desktop), a new option called Label lets you assign a different colour to files that have different priorities or that are part of specific projects. You can then view your files by label. One nice change is that by viewing files according to name, date, or label, you can now use outlining features to expand or collapse the contents of folders.

Another change is that an application menu now appears on the far right side of the menu bar that lets you easily switch to other running applications. This is a nice step forward over listing the applications on the Apple menu, as in the old system.

The control panel has been enhanced to include multiple icons



that let users set various networking options, such as allowing file sharing and program linking. You can also turn on and off a virtual memory feature (so that the machine will use the hard disk if you run out of physical memory) and 32-bit addressing.

My biggest concern with System 7 is compatibility with existing Mac applications. Like most Mac users, I've run into minor compatibility problems with smaller updates of the operating system — and unfortunately, the prerelease version of System 7 that I looked at follows this pattern. This version did a fine job running Foxbase+/Mac, Microsoft Word 4.0, and Adobe Illustrator 3, but it stumbled running QuickKeys and would not run the Tempo II macro recorder at all.

Does System 7 have everything you could ask for? It's still not really designed for multitasking nor for multiple communications sessions. But based on a quick look, I'd guess it will satisfy most Mac users for quite a while. ■

Western Australia firm wins contract

Nimrod Computer, a Western Australia-based company, has won a \$2.5 million contract with Parliament House in Canberra. In winning the contract Nimrod over-stepped competition such as Olivetti and IBM. Under the terms of the agreement Nimrod will build and install over 500 PCs in the next 12-18 months. A source close to the company said Nimrod expects to replace or update up to 1,500 PCs at Parliament House. Approximately 200 units will be connected directly to the Parliamentary Ethernet with Digital and Ungermann-Bass network interface cards. All the computers will be built in Nimrod's production facility.

Future objectives of Wang

On a recent visit to Australia Rick Miller, Chairman and Chief Executive Officer of Wang, assured that Wang is now "in control of its own destiny". Having rid the company of its \$575 million bank debt the company had \$182 million in cash equivalent on hand, as of 30 Dec 1990. A major theme that emerged from both his address to employees and the media briefing was that Wang will be customer-driven. Wang's objective is to make quality in products and services an everyday part of Wang, with major emphasis on improving the work productivity that technology, including its Office 2000 strategy, is supposed to deliver.

Everex announces new distributor

Everex Systems Incorporated has appointed Multisource Pty Ltd the sole distributor of all Everex products throughout Australia. Multisource will also service and support all Everex products previously sold in Australia. Everex will provide backup support. Multisource will carry many Everex products that were not previously available. Everex will maintain an office in the Australian market as it has in the past through its wholly owned subsidiary, Australia Everex Systems Pty Ltd. However, Multisource will take over the selling and servicing of Everex products.



Hewlett-Packard presents a new palmtop



The HP 95LX Palmtop PC has MS-DOS and 1-2-3 in ROM

The new HP 95LX Palmtop PC has been jointly developed by Hewlett-Packard and Lotus. The palmtop combines PC power with full Lotus 1-2-3 Release 2.2 capability.

The HP 95LX allows users to edit reports and letters, access electronic information services and company electronic mail, track appointments and assignments and organise phone numbers and addresses. The 312-gram palmtop system includes an advanced HP Financial Calculator. Other features include Lotus 1-2-3 Release 2.2 in ROM, MS-DOS ROM version 3.22, a 16-line x 40-character supertwist LCD, serial port, instant one-key access, Qwerty keyboard, and 512K of RAM.

With Lotus 1-2-3 Release 2.2 and MS-DOS executable from ROM, most of the 512K RAM is available for file creation and storage. The HP 95LX palmtop runs on two AA batteries and will sell (probably in June), for \$995. Phone the distributor Twinlock Acco, (03) 544 4000.

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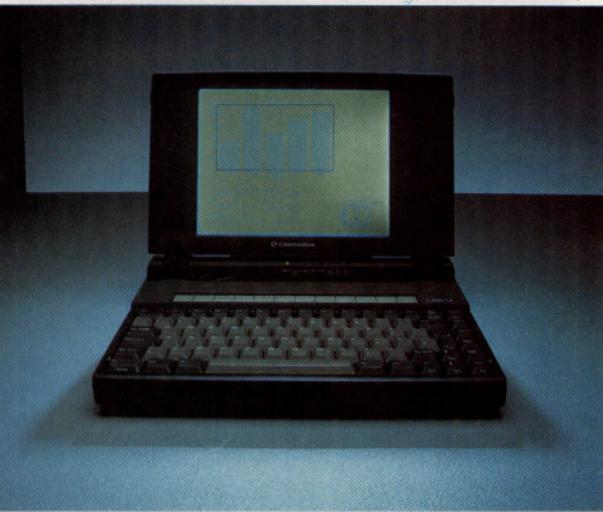
A stylish laptop from Commodore

The C286-LT is a small laptop, or a large notebook — take your pick

Robert Thirlwell

A new laptop from Commodore adds another model to the ever-increasing tally of small computers that is flooding the market. The Commodore C286-LT is solidly built and quite stylish, with a clam shell case covered in a dark grey material that looks a bit like industrial velvet.

Based around a low-power 80C286 microprocessor running at 12.5MHz, this AT-compatible runs for about two hours on its rechargeable NiCad battery. It is equipped with one megabyte of RAM, a low powered 20Mb hard disk, and a 1.4Mb 3½in floppy drive on the right hand side of the unit. This system setup is adequate for running Windows and most programs, although better performance could be obtained by adding extra RAM (up to 5Mb can be loaded).



The outside measurements are 30cm x 25cm x 5cm, which is slightly larger than A-4 size (30cm x 21cm). The laptop weighs 3.2kg, around average for this size of machine. Although described by Commodore as being a laptop, it could just qualify for notebook status. A carry bag is supplied as standard equipment.

Ease of use is very good. The keyboard has a good feel, and there are separate direction keys. A LED lamp indicator lights up when battery power is getting too low.

The backlit VGA display screen is quite readable, but not as bright as some other manufacturers' designs. It measures 24cm diagonally, and can display 8 shades of grey. There is a socket at the rear for connecting an external VGA screen.

MS-DOS 4.01 is installed, along with other Commodore software for

configuring the laptop's setup. Power saving features extend the battery life, and the AC adaptor can quick-charge the battery in around two hours. The battery itself forms part of the top rear casing, and is easily unclipped. A spare battery can be purchased as an option.

Other standard features include serial and parallel ports, and a proprietary expansion slot for an internal modem. There is no provision for an industry standard architecture expansion slot. The price is \$3,999, which includes the carry bag. Although there are notebooks available that are lighter, have more RAM, and are powered by the faster 386SX microprocessor, they are also more expensive. For today's portable computing requirements, the C286-LT is a reasonable value at this price. Phone Commodore, (02) 428 7777. ■

Persuasion 2.0 for Windows is well equipped

By Geoff Long

In the computer industry, it's not uncommon to be overwhelmed by displays that can seduce an audience utilising the latest in high-tech presentation tools. But warp back in time to the real world and strain your eyes on the text and graphics of the average lecture hall or company meeting — you'll realise that the market for desktop presentation software is still relatively untapped.

Aldus's recently-released Persuasion 2.0 for Windows is one program that is well equipped to promote itself in this growing sector. The program has actually been around for a while, though up until now it has been confined to the Macintosh market. The good news for Windows 3.0 users, however, is that Aldus has been able to deliver many of the features that made it popular on the Mac.

Persuasion 2.0 for Windows covers all the areas that go into making a successful presentation. It can be used to produce overheads, 35mm slides, handouts, and speaker notes, and has capabilities including outlining, drawing, charting, and presentation management. A selection of templates is available which you can adapt for your own use, allowing you to produce professional-looking presentations without having to start from scratch. And once you're through, you can preview the presentation or overview all slides in thumbnail size.

ON WITH THE SHOW

Aldus uses the same setup program for installing Persuasion as the one that is used with PageMaker 4.0. Once running, it gives you options for installing the package, which includes AutoTemplates, filters, tutorial files and a huge selection of clip-art. It also tells you how much free

disk space you'll need, which is probably just as well considering that, all up, there's over 10Mb of files included. If you choose to install just the application it will need about 4Mb of disk space, but the templates are definitely worthwhile for your initial presentations. It is also worth noting that if you're already using other Aldus

The good news for Windows 3.0 users, however, is that Aldus has been able to deliver many of the features that made it popular on the Mac

products, PageMaker for instance, you can share filters, dictionaries and the setup program by placing the shared files in a common directory.

Starting your presentation is typically done using Persuasion's outline view. The outliner allows you to assign titles, text and charts to a "slide master", and provides the structure for your presentation. The slide master then translates the information from the outline onto individual slides, where they can be edited and visually enhanced. You can change your mind and apply a different slide master to a slide and the changes will be automatically updated in the outline.

Users of PageMaker will find editing slides a cinch, as Persuasion takes a lot of the features that have given its stablemate a reputation for ease-of-use — including the pasteboard metaphor that allows you to place design elements around the work area. To liven things up, you can use Persuasion's colour palettes to enhance both charts and individual

slides. Colour schemes and chart formats can be cut and pasted between different presentations and the program also imports colour TIFF files directly. When all the slides have been completed, you can assign one of the transition effects, such as a fade or wipe-out, to complement your work.

LEARNING YOUR LINES

Getting a basic slide show up and running is made easier by the included AutoTemplates, but other features will take time to master. Fortunately, Persuasion is backed by some fine documentation and the on-line tutorial is a good way to get introduced to the program. Of course if you've had some desktop publishing experience, especially using PageMaker, things will be a lot simpler.

The documentation also includes a desktop reference showing details of the different AutoTemplate designs. There are specific templates for various needs including designs for 35mm slides, overheads, on-screen presentations and colour versions for different output devices.

One potential problem with programs of this size and complexity is that, especially under Windows, they tend to be a bit sluggish — and Persuasion is no exception. The minimum configuration required is a 286 machine, but a 386 — such as the Amstrad 3386SX machine used for this review — will perform better.

Persuasion 2.0 for Windows is not the only presentation program on the market, but its strong links with both the Mac version and Aldus's PageMaker for Windows will increase the appeal of an already strong product. Persuasion is available through InfoMagic (02) 975 1044 and retails for \$985. ■

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CORNERSTONE
TECHNOLOGY

SPC's ProWrite Plus packs extras for mid-range users

This windows word processor has two extra features: The Grammatik grammar checker and electronic mail

By Michael Miller

Software Publishing Corp's Professional Write Plus is staking out a middle ground in Windows word processors by including such extras as a built-in grammar checker and electronic-mail connection.

ProWrite Plus doesn't share much with the DOS version of Professional Write. Instead, it is built on code used in Samna Corp's Ami — the low-end version of Ami Professional.

However, SPC has made the menus and icons a bit more straightforward than those in Ami.

Professional Write Plus has just about all the major word processing features — with some extras. It lets you define and change templates with multiple styles, then apply those styles to paragraphs.

You can set several options in those styles, including fonts, alignment, spacing, breaks, notations (for such things as outline numbering), lines before and after paragraphs, and activating hyphenation.

Like Ami, Professional Write Plus allows you to add graphics to your documents by placing frames in the text, then bringing in graphics. You can place either text or graphics in a frame, make the frame transparent or opaque, and choose whether you want text to wrap around the frame.

ProWrite Plus supports a huge variety of graphics formats. For most formats, you can rotate, scale, and crop the images, depending upon the limits of the image format. You can set the number of columns for a document, but changing them within a document (so that one section has a different number of columns than another) requires using frames. This can create some limitations.

Other word processing features include multiple rulers, a basic mail-merge, footnotes, inserting variables and annotation notes, and a multiple-level undo. You can import and export files from many popular word processing formats, including WordPerfect, Word, Word for Windows, and Professional Write (it will read Ami files directly).

Like Ami, it has several different views to choose from, including a draft mode and several layout modes,

including working (which shows your full text at 91 per cent) and standard (which shows your project at 100 per cent).

What's missing, compared with the high-end word processors? The biggest limitation is probably the lack of macros or even a glossary feature.

Also, the program does not have a table-creating and editing feature, outlining, or the capability to create indexes or tables of contents.

One annoyance it shares with Ami Professional is that you can only open one document at a time in the primary word processing window. However, you can open another copy of Professional Write with a second document.

On the other hand, Professional Write Plus has two features I hadn't previously seen in a Windows word processor.

The first of these is the Grammatik grammar checker. By pulling down "Grammar" from the same menu you'd choose for running the spelling checker or thesaurus, you move into the grammar checker with your current document.

In general, Grammatik is a very good grammar checker with many options, but it hasn't been customised to work with ProWrite Plus. For instance, it uses different editing keys and won't let you delete ProWrite paragraphs (and complains when you delete extraneous spaces). Still, I suspect this could improve many business letters.

The other innovative feature is built-in electronic mail. With this option, you can send and receive electronic mail directly from within the word processor, if you connect to a network that is running the Novell/Action Message Handling Service (MHS).

The e-mail feature lets you send your current document immediately, send a message or just selected text, read messages, and maintain an address book.

In summary, Professional Write Plus, at a price of \$395, is a great choice if you want to produce basic letters, memos, and reports; include graphics, and check the spelling and grammar. SPC, (02) 418 7188. ■

The e-mail feature lets you send your current document immediately, send a message or just selected text, read messages, and maintain an address book

IBM releases a real laptop

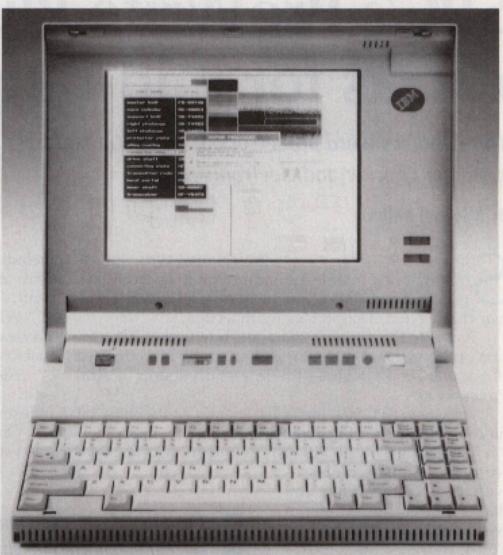
IBM re-entered the laptop market last month, with a 3.5kg, 386SX-based PC, called the Laptop Model PS/2 L40SX. It has a base configuration of 2Mb of RAM expandable to 18Mb; a 3½in 60Mb hard drive, a 1.44Mb floppy drive, a 10in VGA LCD screen with 640 x 480 resolution and 32 shades of grey, and a 101-key keyboard. The new system measures 27cm x 32cm x 5cm. It operates on nickel cadmium batteries that can be recharged in two and a half hours with an optional quick charger. Other features include a slot for an internal fax/modem, and an optional serial adaptor for connecting a second serial device. The L40SX has Industry Standard Architecture (ISA) expansion slots, rather than IBM's usual MCA architecture. A monitoring system in firmware informs the user of the status of several important functions, including battery life, via a series of icons.

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The IBM PS/2 laptop Model L40SX runs on a 20MHz 386SX processor, and has ISA (Industry Standard Architecture) expansion slots



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| Example: Sales Activity Reports | | | | | |
| Products | | | | | |
| Topic | Region | Group | Priority | | |
| Rendezvous | NE | Sop | Exec | | |
| Alternative methods of distribution | NE | Ref | Exec | | |
| Customer Reaction to Rendezvous II Announcement | SW | Corp | Exec | | |
| Dealer inquiries about the Dealer Authorization Policy | GL | Ref | Exec | | |
| Customer Response to Rendezvous II Announcement | NE | Corp | Exec | | |
| Rendezvous is becoming successful at Home Bros | SW | Corp | Exec | | |
| Customers say that enhanced output in ABSOLUTELY EISERH | SW | Corp | Exec | | |
| Rendezvous - LanVision presentation for dealers | NE | Ref | Med | | |
| Reps are reporting success in New York | NE | Ref | High | | |
| We'd like to see another Rendezvous course offered | GL | Ref | High | | |
| Successful implementation of Rendezvous II | NE | Ref | High | | |
| Successful implementation of Rendezvous II | NE | Ref | High | | |
| Success in New York | NE | Ref | High | | |
| SmartSoft was sufficiently immobilized by their re-org (resonance NY) | NE | Ref | High | | |
| Inside Sales reps would find it very helpful to have access to M... | NY | Corp | High | | |
| Home Bros are doing well | NE | Ref | Med | | |
| Rendezvous - LanVision Presentation for Dealers Rept: | NE | Ref | Med | | |
| Rendezvous - LanVision presentation for dealers | NE | Ref | Med | | |
| Rendezvous - LanVision presentation for dealers | NE | Ref | Med | | |
| SelfNet has successfully beta tested Rendezvous | DC | Ref | Exec | | |
| 1. Good Job (Jack Durham) | NE | Ref | Med | | |
| SI has signed the Resellers Master Agreement form to s... | SD | Ref | Med | | |
| Network Day for Resellers | NE | Ref | Med | | |
| Rendezvous - Unix | NE | Ref | Exec | | |
| Alternative methods of distribution | NE | Ref | Exec | | |
| LanVision has constant promotions in retail stores | NE | Ref | Exec | | |
| Many of our new dealers are small vertical market operations w... | DC | Ref | High | | |
| Home Bros are doing well | NE | Ref | Med | | |
| Rendezvous Unix continues to grow at Shanton's Trust | NY | Corp | Med | | |
| Boston Trust Bank has standardized on FIV-Linx | NE | Corp | Med | | |
| Resellers are doing well | NE | Ref | Med | | |
| Alternative methods of distribution | NE | Ref | Med | | |

Lotus Notes 2.0 is a Windows interactive group communication product that enhances electronic mail

Lotus Notes 2.0 has full Windows capability

Lotus describes Notes version 2.0 as an interactive work group communication product for local-area networks and wide-area networks. It is an enhanced Windows or OS/2 e-mail product that can send and receive messages including text mixed with graphics. A number of features allow users to customise Notes to suit their own company's requirements. Shared databases of e-mail messages can be stored and accessed using a forms metaphor for data entry. Notes is compatible with most networking operating systems. Possible applications include client tracking, conferencing, customer support, phone messages and news broadcasting. Notes supports Windows' DDE (dynamic data exchange) and OLE (object linking and embedding).

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Printers

HP's high-end RISC machines

Hewlett-Packard has released a new PA-RISC 9000 series 700 range of workstations and servers which it claims are the fastest in the world. The range consists of three 32-bit EISA machines, which boast performance ratings in excess of 76Mips. The micro-architecture of the new computers appears to be a marriage between HP's RISC and Apollo's PRISM RISC. All machines support the new release of HP's Unix-flavoured HP-UX 8.0 operating system. The diskless entry level model 720, sporting a price tag of \$22,990, claims 57Mips, 55.5 SPECmarks and a 66MHz clock rate with 16Mb of memory. The 730 model is said to reach 76Mips, 72.2 SPECmarks and a 66MHz clock rate and the starting price is \$38,990, for a greyscale (GRX) configuration with 16Mb of memory, 19in monitor and a 210Mb disk. The model 750 in its base configuration with colour (CRX) screen, 16Mb memory, 19in monitor and 660Mb disk is \$83,490. In server configuration it is \$76,990.

◆ Hewlett-Packard Australia

Phone: (03) 895 2651

FreeFacts ES-23



The HP Apollo 9000 Series: From upper left, Model 720GRX and Model 750 TurboVRX workstations, Model 750 server (upper right), and model 730CRX workstation

Mac gets System 7 operating system

The long-awaited operating system extension for Macintosh computers will be released this month by Apple. It replaces System 6, and provides new features such as an improved Finder, file sharing between users, TrueType outline fonts, and virtual memory. An expanded toolbox provides software developers with a data access manager, inter-application communications, and an improved sound manager. Other enhancements include balloon help, 32-bit QuickDraw, and a new LaserWriter printer driver. System 7 retains the Macintosh desktop metaphor and will run on the entire Macintosh product range, provided there is a minimum of 2Mb of RAM available — and a hard drive is recommended. Pricing was unavailable at press time. See the first look on page 17.

◆ Apple Computer Australia

Phone: (02) 452 8000

FreeFacts ES-24



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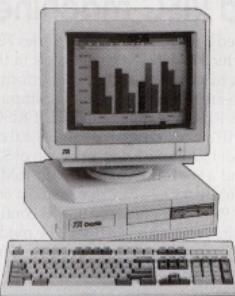
Faximile: (03) 899 0972

Triumph-Adler Dario 386SX

The Dario 386SX is a low cost high-performance professional PC from Triumph-Adler. Based on the 80386SX microprocessor, the Dario 386SX operates at either 8 or 16 MHz with zero wait states, has a 40Mb or 100Mb hard disk unit, 1Mb of RAM expandable to 16Mb, a small footprint, three free full-size expansion slots and a VGA graphics controller on the motherboard. The Dario 386SX boasts a footprint of 10cm x 36cm x 31cm, and is designed to be used in either Ethernet, Token Ring or Starlan networks. The Dario 386SX sells for \$3,995.

◆ *The Olivetti Group*
Phone: (02) 748 2600

FreeFacts ES-12



*The Triumph-Adler
Dario 386SX,
a low cost, high-
performance PC*

HP LaserJet IISi

The Hewlett-Packard LaserJet IISi is a 17ppm printer with Resolution Enhancement technology and the HP PCL 5 printer language. The printer features two 500-sheet input trays. A RISC-based formatter enables the printer to scale type and produce mixed text and graphics. Options include integrated Adobe PostScript, a duplex printing mechanism, and high-performance Token Ring or Ethernet network printer interfaces. The HP LaserJet IISi printer uses microfine toner which, in combination with HP's Resolution Enhancement technology, produces print quality comparable to typeset quality. The HP LaserJet IISi comes standard with 1Mb of printer memory and four SIMM slots. The printer is available for \$9,826.

◆ *Hewlett-Packard Australia*
Phone: (03) 895 2651

FreeFacts ES-13



HP LaserJet IISi printer

dBase IV for Sun

Ashton-Tate Pty Ltd has released dBase IV for Sun. dBase IV applications developed on PCs will run without modification on high-performance Sun-4, SPARCstation and SPARCserver systems under the SunOS version of Unix. Retaining the familiar PC operating environment, dBase IV for Sun also offers Unix features such as full security, multi-user and multi-tasking, virtual memory and enterprise-wide networking. dBase IV for Sun is available as a single-user product for \$1,400 with a multi-user pack for four additional users costing \$4,225.

◆ *Ashton-Tate Pty Ltd*
Phone: (02) 953 9500 FreeFacts ES-14

High resolution display from Eizo

The T660 is a 20in high resolution colour display from Eizo corporation. The .31mm dot pitch 20in Sony Trinitron based colour display unit has a saddle deflection yoke that reduces low frequency radiation to less than 2.5mG (milli Gauss). Other user safety features include an anti-static screen for dust control, dynamic beam spot control for superior focus and brightness, plus a low reflection screen for minimising eye strain. Maximum resolution of the T660 is 1,600 dots x 1,280 lines. The T660 fully complies with the new Swedish radiation standards and sells for \$7,500 (excluding tax).

◆ *Megavision Pty Ltd*
Phone: (02) 975 1877 FreeFacts ES-15

SHARPWRITERS WANTED!

Sharp Corp of Australia in conjunction with *Australian PC World* is looking for soothsayers, visionaries and all frustrated writers in search of fame (and some great prizes too).

SharpWriters is a short story competition open to all writers and would-be writers in the following categories:

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1st PRIZE: PC-6220 (Notebook Computer)
JX-9500 (Laser Printer)

RUNNERS UP: ZQ-5200 (3 Prizes) (Electronic Organiser)

CATEGORY TWO - Towards A Better World. 1000 words on computer technology as a way to improve the world.

1st PRIZE: PC-4702 (Laptop Computer)

CATEGORY THREE - Australia's Future Leaders. 1000 words on computers in education.

(Open only to all final year students of TAFE,
Tech colleges and Universities)

1st PRIZE: PC-4702 (Laptop Computer)

TEACHERS PRIZE - Teacher of winning student
ZQ-5200 (Electronic Organiser)

Send your contributions to: Robert Thirlwell
PC World, 37-43 Alexander St, Crows Nest, NSW 2065

Entries close June 30th, 1991

Prizes awarded July 1st, 1991

"Everyone shall have 15 minutes of fame, SharpWriters could be yours"

- Arnold Krantz, 1991



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| NETCOMM Smart 123 SA | 565.00 |
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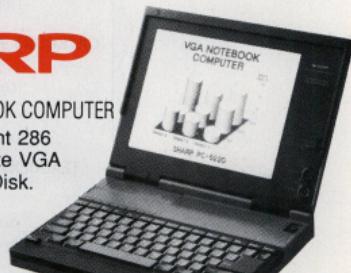
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PC-6220 NOTEBOOK COMPUTER

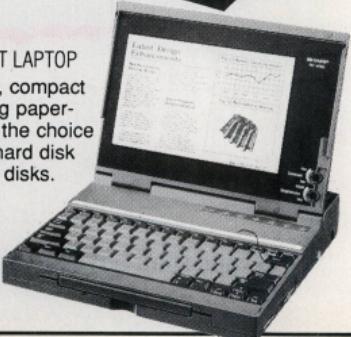
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Weight - 3Kg



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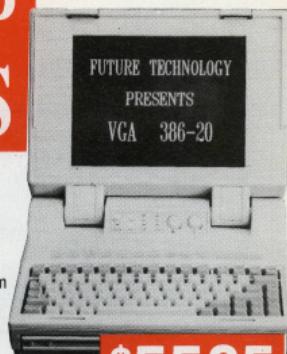
CPU - 80386SX-16 • BIOS - Phoenix 386 • System Clock - 8/16MHz
(software selectable) • Coprocessor - Socket for 80387SX
Memory - 1Mb standard (2Mb or 4Mb optional) • Storage - 1@ 3.5" FDD
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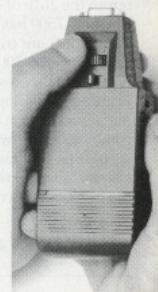
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Microtek's TrueLaser incorporates Microsoft's Truemage

First Truemage laser printer

TrueLaser is the first laser printer to support Microsoft's True Image page description language and is powered by the AMD Am29000 32-bit RISC processor. Truemage offers Adobe PostScript compatibility and also provides PCL emulation. Boasting a 300 x 300 dpi and a 6ppm engine, 35 trueType fonts are also included. The TrueLaser will be available for below \$5,500.

◆ *Image Products Pty Ltd*
Phone: (02) 415 0344

FreeFacts ES-16

Epson PostScript laser printer

Epson has added a member to its family of page printers. The EPL-7500 is a true Adobe PostScript laser printer designed around a RISC processor. With a print speed of 6ppm the 2Mb of standard memory is expandable to 6Mb. The EPL-7500 has 35 built-in fonts in 11 font families. These fonts are complemented by screen fonts to ensure Wysiwyg. The 300 x 300dpi printing emulation offers near typeset quality text. The printer also features MicroArt Printing technology which offers a "blacker black", finer line reproduction and sharper images. A 250-sheet tray comes standard with the machine as do parallel, serial and AppleTalk interfaces. HP LaserJet Series II emulation is also included. Epson provides 12 months warranty and the EPL-7500 is available for \$6,260.

◆ *Epson*
Phone: (02) 452 0666

FreeFacts ES-17

TI high performance Unix computer

Texas Instruments has added to its 1500 family of Unix-based computers. The 1507 computer uses a Motorola 68040 and can handle up to 64 active users. With up to 6Mb of memory and 4.5Gb of disk storage the system is aimed at the business user. The 1507 is binary compatible with all members of the 1500 family and has a compact, single-processor board design with on-board communications and SCSI file processors. The 1507 runs an enhanced version of the Unix System V operating environment, TI System V version 3.2.2. A four-user base system will sell for approximately \$30,000.

◆ *Texas Instruments Aust.*
Phone: (02) 878 9000

FreeFacts ES-19

CASE:W Corporate Edition

Advanced Software Engineering has announced CASE:W Corporate Edition, a development tool for large scale, advanced Windows programming. While offering all the functions of CASE:W standard edition, CASE:W Corporate Edition adds advanced features such as Secondary Windows Support, CUA Validation, Help System Generation, Improved Client Area Support, Message Support, Extended Code Support, and Regeneration Performance Improvements. CASE:W Corporate Edition is priced at \$2,000 for single user versions. Upgrades are available for \$500.

◆ *Advanced Software Engineering Pty Ltd*
Phone: (03) 882 522

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The 1507, Texas Instruments latest addition to its 1500 Unix family

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| Control Room | \$179.00 |
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| Lotus Magellan | \$199.00 |
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| Mouse | \$265.00 |
| Norton Backup | \$210.00 |
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| Norton Utilities V5 | \$255.00 |
| PC Tools Disc V6.0 | \$230.00 |
| Security Guardian | \$265.00 |
| Sidkick Plus | CALL |
| Sideways | \$89.00 |
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| Fujitsu DL4600 | \$2,239.00 |
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| Brother M1924L | \$1,095.00 |

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| Canon LPV IV | \$2,795.00 |
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| Trident VGA 16bit | \$225.00 |
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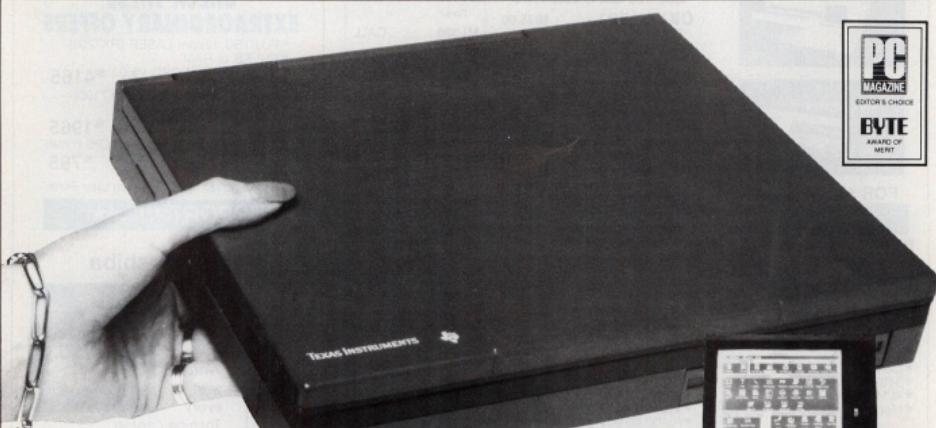
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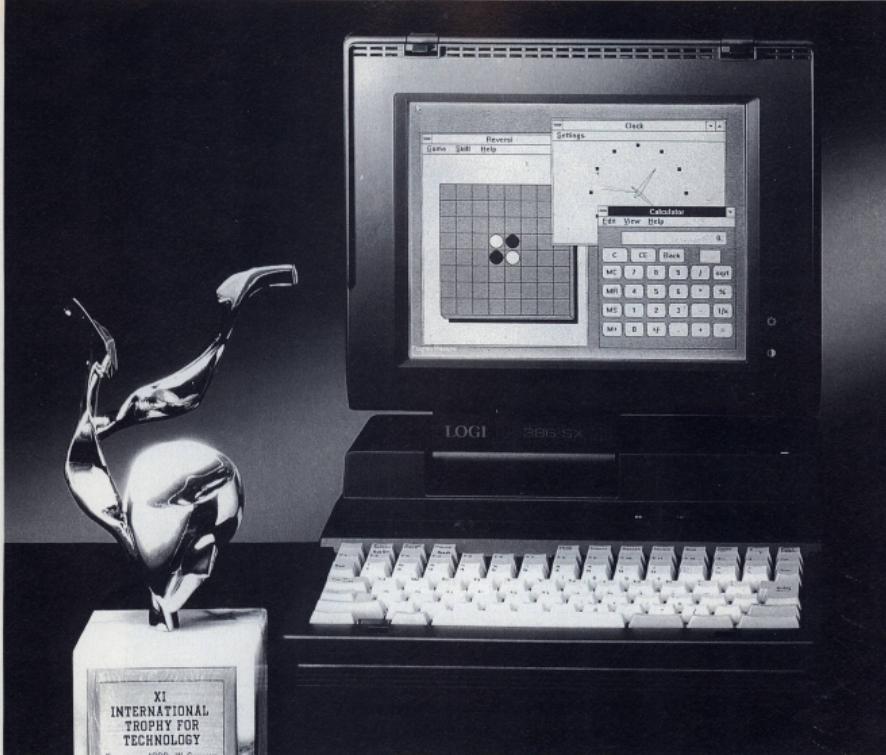
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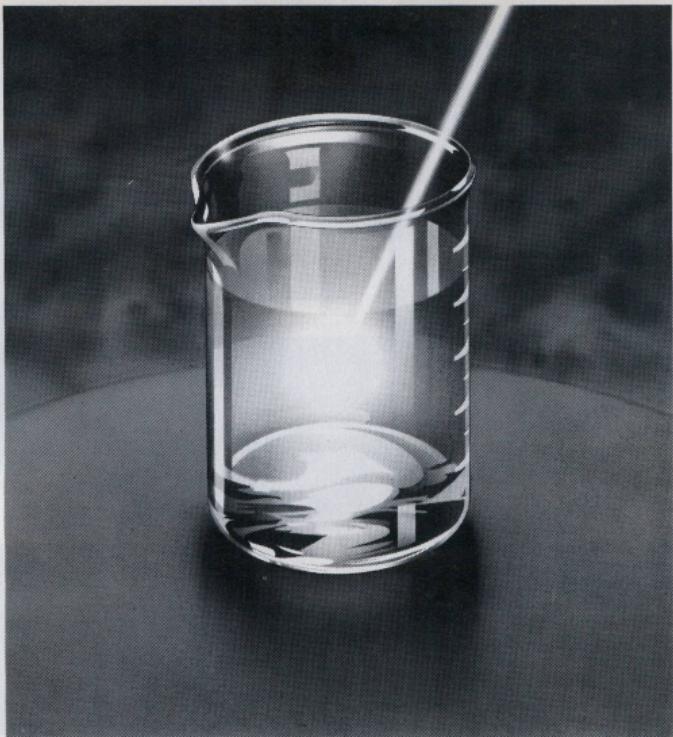
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The PS/2 Model P75, a 33MHz 486-based luggable system from IBM, is an interesting if strange step in the evolution of portable computers. This system is definitely a much different animal from the company's other notable portable, the Model P70.

In addition to the obvious CPU upgrade, two more expansion slots are provided in the P75 than in the P70, and the P75 supports a whopping 16Mb of RAM on the motherboard.

With a weight of over 9kg, this system doesn't exactly qualify as a notebook or laptop computer to be used on the fly, but it's an all-in-one system with a handle that is portable enough to accompany you to remote locations where you plan to settle in for a while.

FEATURES

The Model P75 comes standard

with 8Mb of 70-nanosecond RAM in 4Mb SIMM packs (expandable to 16Mb on the motherboard). The standard system reserves 128K of memory for the shadow RAM (all the BIOS functions are loaded in to fast memory), and it has a 160Mb hard drive.

An optional P75 configuration — the one we tested — includes a 400Mb hard disk. Price and storage capabilities are the only major differences between this configuration and the standard P75. All configurations come standard with a video port that supports VGA/XGA; one serial and one parallel port; a mouse port; an external storage device port; and a SCSI connector.

Our system came configured with IBM's 2,400 bit-per-second (bps) internal modem and a 3270 connection board. We took these boards out in order to perform our tests.

Continued page 40



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| NEC CD-ROM int. | 960.00 |
| NEC CD-ROM ext. | 1090.00 |
| NEC CD-ROM Interface | 270.00 |
| Hitachi ext. CD-ROM Kit/S/W | 1400.00 |

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| Fujitsu RX7100 | 2499.00 |
| Fujitsu RX7200 | 5450.00 |
| OKI 400 | 2099.00 |
| OKI 800 | 2880.00 |
| EPSON EPL7100 | 2395.00 |
| OMS-PS 410 Postscript | 4850.00 |
| Dataproducts | pls. call |
| TI Microlaser | 2450.00 |
| TI Microlaser Postscript | from 3640.00 |

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| Colorado Jumbo 120 external | 750.00 |
| Colorado Jumbo 250 internal | 720.00 |
| Colorado QF-500 int./ext. | call |
| Archive | call |
| Peridate | call |
| Cipher | call |
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| I/O Cards | call |
| EMS card 2 Mb (Ok) | 195.00 |
| TP Serial MS compt. | 95.00 |
| Logitech Scannman Plus | 325.00 |
| Logitech Scannman Mod.256 | 645.00 |
| HP Scanjet A4 w/AT Interface | 3190.00 |
| Epson GT-4000 Colour A4 | 2599.00 |
| Sharp Scanners | Call |
| Howtech Scanners | Call |

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| Logitech Mouse 9 and Mouseman | Call |
| Microsoft Bus or Serial | 199.00 |
| TP Serial MS compt. | 95.00 |
| Logitech Scannman Plus | 325.00 |
| HP Scanjet A4 w/AT Interface | 3190.00 |
| Epson GT-4000 Colour A4 | 2599.00 |
| Sharp Scanners | Call |
| Howtech Scanners | Call |

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| | |
|--------------------------------|-------------|
| Mono/Herc card w/ Printerport | 99.00 |
| Tseng Labs EVA-1024X w/512k | 270.00 |
| Tseng Labs MEGA-EVA 1024X w/1M | 315.00 |
| ZPG/VGA 16-bit 512k | 250.00 |
| Video7 VGA 1024x (256k) | 475.00 |
| Video7 VRAM VGA (512k) | 825.00 |
| ATIVGA Wonder 1024x768 256k | 575.00 |
| ATIVGA Wonder 1024x768 512k | 725.00 |
| others: | please call |

From page 37

The P75, which pushes the envelope of what can be defined as portable, is a 9.45kg briefcase with a gas-plasma screen and fold-out keyboard. Its 1.4Mb 3½in floppy drive is mounted oddly, with a vertical orientation on the front face of the system and a drive-release latch that tilts the drive for inserting and removing floppies.

The system is not battery powered, but is certainly not intended for use on aeroplanes or on the fly.

Although we scored it as a

33MHz desktop systems we've tested outpace it. Because the Model P75 is a 486-based machine, we certainly expected faster disk-intensive results.

All three of the 486/25 systems listed above outpaced the Model P75 in disk-intensive tests.

When we asked IBM to discuss the slow results we found with the P75's hard disk, we were told that we should have been using disk-caching software that is included free with Model P75 units.

Our contact emphasised that Model P75 users will use this software. Disk caching software will

tested and it's large to boot. Size and weight are crucial issues to evaluate with this system.

Different users will rate this system's heavy weight and large size in different ways, depending on whether they are comparing the system to portable computers (nearly all of which are larger and heavier). Because it is very heavy and large for a portable computer, the P75 earns a poor score in this category.

Battery Life: The Model P75 is classified and marketed as a portable computer. Our readers have consistently told us via surveys that they look for batteries in portable systems.

Although the P75 obviously isn't intended for use on the fly, it would be preferable to have a battery and we must give the Model P75 a score of N/A in this category.

Software compatibility: We performed the same software compatibility tests as we normally do on desktop CPUs. The Model P75 passed all of these tests with ease, though it could not run Crosstalk, Version 3.61. We have had a similar problem with fast 386 and 486 machines in the past. However, we were able to run Crosstalk, Version 3.7 with no problems.

The P75 outdoes many portable computers at software compatibility and earns an excellent score in this category.

Keyboard: the 101-key enhanced AT-style keyboard folds down from the case. The keys have a soft, responsive return action with the familiar IBM click. There is a cord attached to the keyboard making it possible to use it away from the immediate vicinity of the CPU.

This keyboard is one of the best we have seen on portable or desktop systems, and it warrants an excellent score.

Expandability: We do not normally test hardware expandability with all portable computers because the options are usually few and the room is scarce.

The Model P75, however, has two 16-bit slots and two 32-bit slots, which permitted us to perform even our standard desktop CPU hardware

Different users will rate this system's heavy weight and large size in different ways

portable computer, we include discussion of our standard compatibility and throughput tests for desktop CPUs on this system — excluding server tests.

PERFORMANCE

Speed/CPU-intensive applications: We compared our speed results for the P75 to those of the 386/33 machines tested in product comparisons in our March 1991 issue, and to a few of the 486-based systems we've tested.

The model P75 completed our CPU-intensive speed tests in 10 minutes and 49 seconds. The time is faster than any of the machines in the 386/33 comparison by about 40 per cent. The fastest high-end portables we've tested don't even approach the P75's times.

The AST Premium 486/25, Compaq DeskPro 486/25, Hewlett-Packard Vectra 486/25 were slower. The Model P75 was slower in both CPU-and disk-intensive speeds than the 486/33 systems tested in our product comparison. Still, scored as a portable computer, it gets an excellent rating.

Speed/disk-intensive applications: The model P75 completed our disk-intensive speed tests in 34 minutes. This is a surprising time because many of the 386-based

likely improve your performance, but it is our policy to test without it, and we did not use it with our tests for this review.

Overall, the Model P75 earns a very good score in disk-intensive tests.

Screen readability: The Model P75 has a gas-plasma display that shows VGA graphics in up to 16 monochrome shades at 640 x 480 resolution. The P75's monitor also supports CGA and EGA resolutions. With an external display, the resolution can go up to 1024 x 768 and 64 shades of grey.

While using CGA- and EGA-supported applications, the gas plasma display will not make use of the entire display, and graphics will be somewhat distorted. The screen and contrast are quite clear and very sharp, even when viewed from angles.

However, occasionally within applications that use multiple colours, the display will need to be adjusted; this is due to the fact that some shades ghost together. Otherwise, the Model P75 has a very impressive display. It earns a very good score.

Size/weight: Other high-end portables, such as the Compaq Portable 386, weigh nearly as much as the P75, but as a portable system this is definitely the heaviest we've

compatibility tests. The tests ran flawlessly and the system earns an excellent score here.

DOCUMENTATION

Documentation consists of a quick-reference guide, an IBM technical directory, and an XGA device driver installation manual. The quick-reference guide is the system's primary manual. It has a table of contents and index, but is missing a glossary.

The information is laid out nicely, in logical order, with ample diagrams. Installation of additional components is covered. The IBM technical directory lists books, reference material, and software products for IBM model computers and IBM PS/2 products.

Documentation is not plentiful, but is fairly complete, and it earns a good score.

SETUP

IBM sells DOS separately, but our Model P75 was configured and ready to run. Like all Micro Channel Architecture machines, the reference disk was included. Changing the setup is painless and fast.

The system's case has a key lock, but the keyboard does not feature password protection. Boards were easy to drop in and remove. Setup earns a very good score.

EASE OF USE

At 9.5kg, this system may be a pain to lug around in spite of its power. If you're taking it to a remote sales office for two weeks, it's a powerful portable ally.

On the other hand, if you're going to a hotel room for two days, you may not end up thinking of it as portable at all.

The system's power switch can only be reached once the keyboard is in the down position, and like all IBM computers, this one has no reset button. The back panel has useful sliding door. Once opened, I/O mouse, SCSI, external storage, and external video ports are exposed and comfortably accessible.

The power cord outlet also has a sliding door protecting it, and the back cover comes off with ease. All

these system features are nice, but the substantial weight of this system when compared to other portable computers keeps us from awarding a higher score than good for ease of use.

SERVICEABILITY

Workmanship: the Model P75 we received had numerous last-minute fixes on the back of the motherboard and some last-minute fixes on the top part of the motherboard. Otherwise, the machine is very sturdy and seems well built. It earns a satisfactory score for workmanship.

Support policies: IBM offers a one-year warranty. All technical support is available through dealers. Dealer-only support earns a poor score under our scoring criteria.

VALUE

The Model P75 comes in two configurations: one with a 160Mb hard disk and one with a 400Mb hard disk. Both models come with 8Mb of RAM on the motherboard.

These powerful memory options underscore the fact that this system could function well as a heavy-duty portable workstation or file server. Many networks are powered by file servers with considerably less hard disk space than comes with the P75.

The memory options are especially impressive when compared to those available with other portable computers. Even high-end 386 portable systems don't offer 400Mb hard disk options.

The Model P75, like many IBM machines seem to be, is overpriced.

The prices are especially high relative to other portable computers, though they are less powerful than the P75. The 160Mb configuration lists for \$27,645 and the 400Mb hard disk configuration has a \$32,651 price tag.

These prices are well above average for portable computers, and are higher than many comparable desktop CPUs. This is a powerful system, and more portable than most desktop computers, but the system earns only a satisfactory score in value. ■

PC WORLD

REPORT CARD

PORTABLE COMPUTER

IBM PS/2 Model P75

(486/33 version)

| Criterion | Score |
|------------------------|--------------|
| Performance | |
| Speed — CPU-intensive | Excellent |
| Speed — Disk-intensive | Very Good |
| Screen readability | Very Good |
| Size/weight | Poor |
| Battery life | N/A |
| Software compatibility | Excellent |
| Keyboard | Excellent |
| Expandability | Excellent |
| Documentation | Good |
| Setup | Very Good |
| Ease of use | Good |
| Serviceability | |
| Workmanship | Satisfactory |
| Support policies | Poor |
| Value | Satisfactory |

PRODUCT SUMMARY

Company: IBM Australia, Coonara Ave, West Pennant Hills NSW 2125.

Phone: (02) 634 8427.

Fax: (02) 899 1054.

List price: \$27,645 (160Mb hard disk); \$32,651 (400Mb hard disk).

Features: 33MHz 80486 CPU; gas-plasma 640 x 480 VGA/XGA display; 101-key keyboard; one serial, one parallel, mouse, SCSI, external storage, and video ports.

Storage and memory: Both models come with 8Mb of RAM expandable to 16Mb; one 1.4Mb floppy drive; 160Mb or 400Mb hard disk available.

Pros: Fast; expandable; strong display, keyboard.

Cons: Too heavy a portable for use on the fly; dealer-only support; no battery.

Summary: This system is as heavy as a system can get when intended for portable use, but those who need full-blown desktop capability for days at a time should definitely take a look.

FreeFacts E5-02

The Need for Speed – part one

Intel's 33MHz 486 chip provides a new plateau in performance

By Steven Turvey



The AST Premium 486/33TE was the fastest machine tested for CPU throughput and hard disk throughput

The i486-33 is Intel's fastest, most powerful CPU chip in production for PC-compatible computers. Do you need one in your computer?

For a network file server, a fast 486 is a good bet. File server performance is a product of the CPU, hard disk sub-system, bus, and network interface card. If the CPU is the bottleneck, a faster chip can improve throughput. Network servers that do more computation tasks — database servers in particular — can benefit even more from a fast 486.

Anyone who uses CPU-intensive applications — such as CAD or heavy duty financial processing — will benefit from the extra speed. The 33MHz 486s will also be popular with those who run other graphical applications (such as desktop publishing). Finally, a super fast CPU is good support for graphical operating environments or multitasking systems such as Windows or DESQview. For standard single user applications, however, one of these machines might just be overkill.

WORTH THE EXPENSE?

In our throughput tests, the 33MHz 486 computers had (not surprisingly) about 27 per cent better speed than the average 25MHz 486. But the average 33MHz 486 shows 83 per cent better performance than 80386-based PCs that run at the same speed. This difference demonstrates the benefits of the engineering details of the 80486 — its built-in maths coprocessor and RAM cache, for example.

Although the relative price of the 486 is a moving target (Intel continuously drops the price of its PC-compatible processors by small amounts, throughout the life of the product), the 33MHz 486 at the time this review was written was approximately 31 per cent more expensive than the 25 MHz.

However, a 486 PC is no longer automatically at the top of the PC price scale. Many vendors are shipping comparatively inexpensive industry standard architecture (ISA)-based 486s — there is a large market for 33MHz 486 PCs as stand-alone workstations.

The most expensive machines combine the highest-end CPUs with high-performance system buses (EISA or MCA), or super fast disk subsystems (such as Compaq's 650Mb ESDI disk drive and AST's 317Mb SCSI).

THE PLAYERS

In this comparison of 33MHz 486s, we look at four systems from leading vendors. They include the AST Premium 486/33TE, Compaq DeskPro 486/33L, Skai Profile 486-33MHz, and Total Peripherals TP 486-33C. It is our intention to test many of the other major vendors (including IBM and Hewlett-Packard) in following issues.

Three of the four, AST, Compaq, and Skai, are EISA-based systems, while the Total Peripherals is ISA-based.

If the blazing performance of these machines isn't quite enough for you, keep in mind that if Intel follows its standard development cycle, we can expect to see 50MHz 486-based PCs demonstrated at the 1991 US spring Comdex.

WHAT WE FOUND — PERFORMANCE

From the results of our performance tests, it seems that 33MHz 486s test the limits of our test suite, rather than the other way around. These machines produced the narrowest range of throughput times of any product comparison to date. For example, in our CPU-intensive test, only 68 seconds separated the fastest and slowest throughputs. Unfortunately we could not draw any definite conclusions with respect to throughput differences between ISA and EISA bus architectures.

In our tests, our only ISA-based system (the Total Peripherals TP 486-33) was only marginally slower than the EISA systems in CPU performance. However it was significantly slower in disk performance. This could simply be due to the fact the TP was supplied with a slower (and less expensive) IDE interface hard drive and not result of the ISA bus. In previous comparisons, ISA-based systems have, for the most part, been measurably slower than EISA systems.

Speed — CPU-intensive: Our fastest machine for CPU throughput was the AST. It took an average of 8 minutes and 59 seconds to complete the test, but this was only 3 seconds faster than the runner-up, Compaq.

Twenty one seconds behind the Compaq was the EISA-based Skai.

Then last on 10 minutes and 7 seconds was the Total Peripherals. These 33MHz 80486-based computers were significantly faster than earlier Intel CPUs.

Speed — Disk-intensive: First place in the disk intensive category easily went to the Skai. With its 4Mb Mylex SCSI caching disk controller it blitzed the field with a time of 14 minutes 14 seconds. The AST had to be content with second place in this category with a time of 16 minutes and 12 seconds. Although the AST was fitted with an identical controller to the Skai, the controller was only populated with 1Mb of RAM which made a substantial difference in disk throughput.

The Compaq was placed third, only 10 seconds behind the AST. Long last at 29 minutes and 52 seconds was the Total Peripherals. This inexpensive system was only fitted with an IDE interface drive which is

the AST, the Compaq's system RAM can be expanded to 100Mb compared to AST's 48Mb. Compaq also offers an optional external drive array which supports up to 19Gb of mass storage. The large tower case of the Skai also offered a great deal of expansion potential but the lack of a case lock lowered its otherwise perfect score to a very good. The mini-tower case of the Total Peripherals is surprisingly spacious, but there is no case lock or Weitek coprocessor support and only 4 slots are available after configuration.

DOCUMENTATION

Documentation for the four 486s varied from informative and well organised to incomplete. AST's documentation was the most thorough and it covered most aspects of the system very well. Compaq's well laid out documentation only really suffered from one failing — a less than

First place in the disk intensive category easily went to the Skai

greatly outgunned by the ESDI and caching SCSI drives of the competition.

Software compatibility: We did not find any software compatibility problems in this group of 33MHz 486s. All four completed our suite of common business and multitasking applications. Compaq was tested with its own expanded memory manager, CEMM.SYS rather than Quarterdeck's QEMM.SYS. All four systems have switchable CPU speeds for compatibility with older, less well behaved software (Crosstalk XVI, for example).

Expandability: The efficient design of its tower case gave AST the edge in mass storage expandability. With our test configuration, it had seven slots and four half-height drive bays open. The Compaq with its desktop case also rated an excellent and, although it did not quite offer the internal mass storage capacity of

adequate troubleshooting section. The documentation of the Total Peripherals machine barely covered the system's essential features. Skai's documentation was inadequate — it consisted of seven separate booklets for each component in the system, but no overall system users guide to tie all the information together. Finding information in the Skai's myriad manuals was difficult and tedious.

Continued page 45

PRODUCTS TESTED

- AST Premium 486/33TE
- Compaq DeskPro 486/33L
- Skai Profile 486-33MHz
- Total Peripherals TP 486-33C

DOS Lives. Despite what you may have read.

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But it was a big step backward for DOS. Suddenly, it was 1987 all over again. Not enough room for DOS programs to run because TSRs, utilities, drivers and buffers were taking up room your DOS programs need.

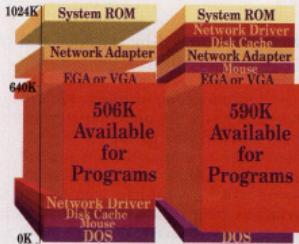
QEMM 5.1 to the rescue

Now, we've updated QEMM to provide additional memory for DOS programs within Windows 3.0.

QEMM 5.1 works with the built-in capabilities of your 80386 or i486 processor to find and recover unused memory segments. As you can see in the chart, there are gaps in your PC's memory usage above 640K. QEMM 5.1 fills those gaps and provides more room for your DOS programs to run.

And of course, QEMM 5.1 still works with DOS when you're not running

Windows. You get all the same benefits: up to 130K more memory to run the new generation of memory-hungry programs; space for larger spreadsheets and database files.



Unused memory is like hidden gold in your PC. QEMM finds it and makes it available.

QEMM-386 System Requirements: 80386 and i486-based PCs and 75/2s and 75/3s with 80386 or i486 add-in boards. Operating system: PC DOS 2.0-3.0, MS DOS 3.0-4.0, Windows 3.0. Conventional memory requirement: 1MB.

DESQview System Requirements: IBM Personal Computer and 100% compatibility with 80386, 80486, RISC and i486 processors and 1MB of conventional memory.

MS-DOS Version 3.0 • Memory: 486 recommended; for DESQview install 1-1/2MB DOS 2.0-3.0 • MS-DOS 2.0-4.0 • Software: Max PC DOS and MS-DOS programs,

* Expanded Memory: iOptimal expanded memory boards compatible with the Intel

Advanced, enhanced expanded memory boards compatible with the AST RAMpage, EMS 4.0 expanded memory boards • Disk Two diskette drives or one

diskette drive and a hard disk • Graphics Card (Optional): Hercules, IBM Color / Graphics (CGA), IBM Enhanced Graphics (EGA), IBM PS/2 Advanced Graphics (VGA) • Mouse (Optional): Mouse Systems, Microsoft and compatibles

• Monitor: CGA, EGA, VGA, Hayes compatible monitors • Operating System: PC-

MS-DOS Version 3.0 • Software: Max PC DOS and MS-DOS programs,

Introducing DESQview 2.3 and DESQview 386 2.3 for users of Windows 3.0

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programs specific to Microsoft Windows 1.0-3.0, GEM 1.1-3.0, IBM TopView 1.1 • Media: DESQview is available on either 5 1/4" or 3 1/2" floppy diskette.

Trademarks: Windows, MS-DOS, Microsoft Corporation, PS/2, Internet, TopView, IBM Corporation, 80386, 80486, AutoCAD: Intel Corporation, 1-2-3: Lotus Development Corporation, AutoCAD 386: Autodesk, Inc; RAMpage, AST Research, Hercules, Mouse Systems, Hayes, GEM, Digital Research, Inc.

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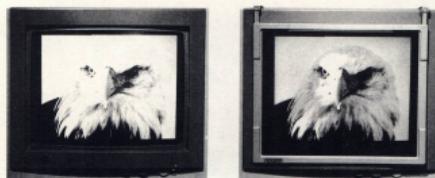
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SETUP

There were no especially difficult setup or reconfiguration features in our sample 486s. In the Compaq, it was necessary to remove the memory or CPU boards to add RAM or a Weitek coprocessor. However, this was easily accomplished. A real plus with the Compaq is the configuration sticker on top of the disk drive bays, which enables you to do simple reconfigurations without looking at the manual.

AST's CPU, memory and coprocessor socket are all on an upgradable CPU card and it's a simple matter to remove the card and access the SIMM sockets and coprocessor slots. Skai's SIMM's and coprocessor socket are situated away from the slots and are easily accessible at all times, most of the configuration is under software control but the few jumpers on the board are easy to reach. Access to jumpers and components on the Total Peripherals is also quite simple with the only trivial problem involving removing four screws and a drive cradle to insert full length cards or access the RAM.

SERVICEABILITY

System design: Compaq's DeskPro had the most sophisticated system design. It had a front-mounted power switch, multiple levels of password protection, a case lock, and an upgradable CPU board. We found no patches or repairs on the surface mount motherboard. The major drawback to the DeskPro's design is its use of relatively expensive memory modules. AST also had a

very clean surface mount motherboard and an upgradable CPU board — the only minor gripe was the rear mounted power switch.

The Skai and Total Peripherals are both solid and well made, but are nothing out of the ordinary, with motherboards that make no use of surface mount technology. The Skai is the only system to show any signs of patches with a single resistor soldered across a PAL IC.

Support Policies: Porchester Computers (Skai's distributor,) and Total Peripherals provided the best support policies. Porchester

**Compaq's DeskPro had
the most sophisticated
system design**

Computers provides a one year warranty with toll-free customer support from 8:30am to 6:30pm. Total Peripherals provides a one year on site warranty with its TP 486-33MHz. Support hours are between 9am and 5:30pm. AST provides a standard one year warranty with customer support between the hours 8:30am and 5:30pm, with the addition of BBS support.

Compaq provides a one year warranty, but has a dealer-only support policy. Our rating system automatically qualifies Compaq for a poor score for their lack of direct customer support. However, the dealer network appears to be extensively trained in the support area and we have had no complaints about the service received from our readers.

Our support rating system is currently under review to cater for such anomalies as Compaq.

VALUE

We measure a system's value based on its overall performance and price. Throughput speed is not a major issue with this group of 33MHz 486s — they're all very fast.

Of the four systems in this comparison, we judged the Total Peripherals 486 to be excellent value. The \$8,500 quoted for the TP is around the true street price but is still at least half the street price of the other systems. Admittedly the ISA motherboard is far less costly to produce and has its limitations, but at the price, it would make a fine cost-effective personal workstation.

The Skai at \$21,985 RRP represents very good value for money particularly when considered for use as a file server. The AST at \$24,749 RRP is a little pricey but when you consider its great performance it rates a good value.

Compaq's DeskPro is the most expensive system tested. Even if you discount the DeskPro by 25 per cent (an average retail discount from the list price) it is still over \$25,000 and around three times the cost of the TP. Admittedly a fairer comparison is the Skai or AST, but even in this company the price of the Compaq is high. Adding in the DeskPro's better performance and expansive memory, we rate it a satisfactory value.

• Victor Garza, Andre Kvitka, Tim Zittle and Tracey Capen also contributed to this comparison.

Executive Summary

With a string of excellents in our performance categories, the AST Premium 486/33TE takes out our Test Centre Product of Choice award. The AST had the fastest CPU and second fastest hard drive. The system displayed quality engineering and sports an upgradable CPU.

The Compaq DeskPro 486/33L's performance was



also excellent and the upgradable CPU and system design was on a par with the AST, but the pricing and dealer-only support just pipped the Compaq for equal first place.

Our overall throughput winner was the Skai Profile 486-33MHz. This is primarily because of the lightning fast hard drive performance of the Skai's SCSI hard drive and caching controller. The Skai with its standard Ethernet card would be a top choice for a file server.

Our slowest system but easily the leader in value was the inexpensive TP 486-33C. The TP would make a fine workstation. Its CPU performance was on a par with the rest of the group, but its ISA bus and small case would be limiting for use as a file server. ■

How we tested 33MHz 486 computers

Our test suite for 33MHz 80486s was designed to evaluate differences in performance and features between popular PC compatibles. We chose applications that tested different aspects of system performance, including video (AutoCAD), expanded memory (Lotus 1-2-3, Release 2.2), extended memory (Lotus, Release 3.0), 32-bit operation (Paradox), and random disk access (dBase III Plus and IV).

PERFORMANCE

Performance is divided into four categories: two speed scores, software compatibility, and expandability.

We now evaluate speed in two areas — CPU-intensive (or memory-intensive) and disk-intensive applications. Our CPU-intensive score is based on the times from a test suite

that executes a series of routines in AutoCAD, Release 10; Lotus 1-2-3, Releases 2.2 and 3.0; and WordPerfect, Version 5.0.

Our AutoCAD tests load a large (500K) drawing, mask layers, change zooms, and hide hidden lines.

Our CPU-intensive score is based on the times from a test suite

In both Lotus versions, we use the three spreadsheets that form the core of our spreadsheet tests: an arithmetic model, which makes mathematically simple projections about the worth of assets over five years; a financial model, which amortises a variable rate, 360-month mortgage; and a scientific model, which con-

structs a 37 x 37-cell bivariate distribution matrix using a complex formula.

In addition, in Lotus 1-2-3 release 2.2, our tests make a number of financial forecasts using management analysis and planning software from Management Advisory Services of Seattle. This macro-menu-driven software uses a variety of templates to manage financial forecasting models. In Release 3.0, we added our page oriented spreadsheet consolidation model (from our spreadsheet testing) that "rolls up" budget figures for 10 departments. In all cases, we performed recalcs based on different values, and added or altered formulas as appropriate.

The WordPerfect tests reformat three documents ranging in size from

Continued page 49

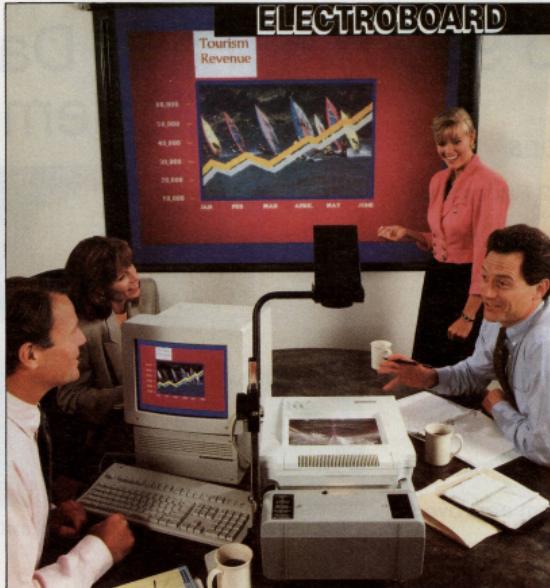
REPORT CARD: Part One PROJECT MANAGEMENT SOFTWARE

AUSTRALIAN
PC WORLD

| Category | AST \$24,749 | Compaq \$34,384 | Skai \$21,985 | TP \$8,500 |
|------------------------|-----------------|--------------------|------------------|---------------|
| PERFORMANCE | | | | |
| CPU Intensive | Excellent | Excellent | Very Good | Very Good |
| Disk Intensive | Excellent | Excellent | Excellent | Good |
| Software Compatibility | Excellent | Excellent | Excellent | Excellent |
| Expandability | Excellent | Excellent | Very Good | Good |
| DOCUMENTATION | | | | |
| | Very Good | Very Good | Poor | Satisfactory |
| SETUP | | | | |
| | Very Good | Very Good | Good | Good |
| SERVICEABILITY | | | | |
| System Design | | | | |
| Support policies | Satisfactory | Poor | Good | Good |
| VALUE | | | | |
| FINAL SCORE | 8.7 | 8.4 | 7.7 | 7.2 |
| Excellent | 1 | Poor | 0.25 | |
| Very Good | 0.75 | Satisfactory | 0.25 | |
| Good | 0.625 | | | |

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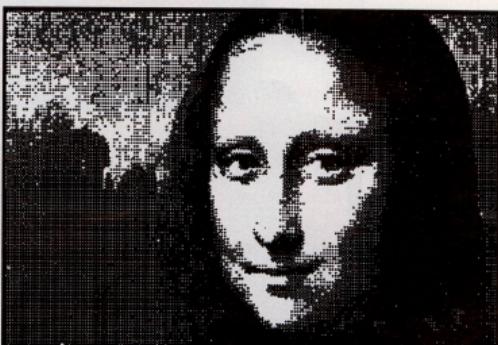
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From page 46

5K to 55K. In the smallest document, our tests alter the fonts for headlines and body text, place a 3 x 5in TIFF graphic file, and preview the new layout. With the other documents, our tests reformat the text using a variety of column, font, and other layout settings.

Our disk-intensive score is based on test times of dBase III Plus, Version 1.1; dBase IV, Version 1.0; and Paradox 386.

In Paradox, our tests use a variant of the transaction processing model from our multi-user database testing. In this test, Paradox logs 3,000 orders for a variety of parts into an invoice database after checking the quantity in stock and price against a master parts table containing 100,000 entries.

In both dBase III Plus and dBase IV, our tests perform an unindexed (linear) search for a record on a similar parts table that contains 100,000 records. Then it indexes that table to run the dBase version of the same

case 33MHz 486 machines, constitute a class.

To receive a good score in speed, a system must nearly equal or better the median, or midpoint, time for that class of computers. Units that perform well above the median receive very good scores; units that rate the best in their class earn excellent scores. Systems that perform well below the median receive satisfactory or poor scores depending on their position.

Software compatibility: Our software test suite includes many of the most popular and complicated business programs, so we can test different aspects of compatibility.

To test software compatibility for the 486 class, we ran the following programs: Crosstalk XVI, Version 3.61; Lotus 1-2-3, Releases 2.2 and 3.0;

The Word Perfect tests reformat three documents ranging in size from 5K to 55K

transaction processing model, but posts only 600 orders.

The aggregate times of the CPU-intensive and disk-intensive tests are compared with the results from computers in the same class; computers with similarly-rated CPUs, in this

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Microsoft Word 5.0 under DESQview, Version 2.25 with QEMM, Version 4.23; Lotus 1-2-3, Release 2.2 and Word under Windows/386; dBase III Plus 1.1 and dBase IV 1.0; AutoCAD, Release 10; WordPerfect 5.0; Paradox 386; and SideKick Plus.

Systems that run all components of our software test suite straight out of the box earn a very good score for software compatibility. Systems that flawlessly handle the software suite and offer a second, slower processing speed (usually 6 or 8MHz) for speed-sensitive software, receive an excellent score. We drop the score one grade for each program that won't run on the system. Systems that require adjustments to run an application lose a half point for each program that needs work.

Expandability: An excellent score for a 486 requires the capability to have 4Mb of 32-bit RAM installed on the motherboard; support for up to 16Mb of 32-bit RAM in the system;

Systems that run all components of our software test suite straight out of the box earn a very good score for software compatibility

at least five slots available after hard disk, floppy and hard disk controllers, video adaptor, serial and parallel ports, and 4Mb of RAM are installed; two half-height mounting positions after one floppy drive and one hard drive are installed; an AT-style enhanced keyboard; a keylock that mechanically locks the system unit; and some manner of disabling keyboard input (either mechanical or via password).

The vendor must also offer a 300Mb or larger hard drive as an option as well as support for a Weitek maths coprocessor. For each item missing, we drop the product's score a half grade. The final grade is rounded down.

DOCUMENTATION

At a minimum, documentation should tell you how to set up and use the system, and include accurate diagrams to illustrate text. We also look for an index or detailed table of con-

tents, troubleshooting help, and customising information (on topics such as installing expansion boards or maths coprocessors). We award bonus points for any of the following as part of the standard documentation: quick-start guide, informative on-line tutorial, glossary, on-line help for the system and MS-DOS, quick-reference card, written tutorial, or technical reference guide. We lower the score if the manual is poorly organised, lacks both a table of contents and an index, does not include information on installing options, or if there are factual errors in the text.

SETUP

Here we evaluate the ease with which a system can be configured, reconfigured, and used. IBM's MCA systems provide a positive example: Expansion boards drop in with a minimum of fuss. Most MCA system options are set with software rather than switches. We examine how easy it is to fit add-in cards into the slots, paying attention to the card guides, bus connectors, and the position of changeable parts such as the sockets for the maths coprocessor and memory. Units that are easy to configure and operate receive good scores. Items that boost the score in setup include useful front panel displays, a limited number of jumpers or DIP switches, on-line users' guides for the system or DOS, and keyboard extras such as macro keys.

Items that hinder the setup score include poor slot layout, badly positioned or numerous jumpers and DIP switches, unprotected or missing reset and power buttons, and — except in Micro Channel Architecture systems — setup utilities on disk rather than in the ROM BIOS.

SERVICEABILITY

System design: We carefully examine systems to see how well they are designed and constructed. We also run our applications suite on each system for 48 hours, which weeds out the weaklings, and we subject the systems to repeated startup and shutdown in the course of our testing.

Continued page 57

PC WORLD

REPORT CARD

33MHz 486 EISA COMPUTER

AST Premium 486/33TE

| Criterion | Score |
|--|--------------|
| Performance | |
| CPU-intensive applications | Excellent |
| <i>Fastest CPU throughput of the group.</i> | |
| Disk-intensive applications | Excellent |
| <i>Fastest disk throughput of the group.</i> | |
| Software compatibility | Excellent |
| Expandability | Excellent |
| <i>Seven slots open after configuration.</i> | |
| Documentation | |
| Very Good | |
| Setup | |
| Very Good | |
| Serviceability | |
| Very Good | |
| Upgradable CPU. | |
| Support policies | Satisfactory |
| Value | |
| Good | |
| Final score | |
| 8.7 | |

PRODUCT SUMMARY

Company: AST Research; Unit 5; 706 Mowbray Rd; Lane Cove NSW 2066.

Phone: (02) 418 7444. **Fax:** (02) 418 7356.

List price: \$24,749 for test configuration; sold through dealer channels.

Features: 33MHz zero-wait-state 80486 CPU, switchable via keyboard or software; EISA bus; two serial, one parallel, one mouse port built-in; Weitek maths coprocessor support; 300-watt power supply.

Peripherals: Enhanced keyboard; AST 16-bit VGA Plus adaptor.

Storage and memory: 31Mb Seagate hard disk with Mylex SCSI 1:1 controller fitted with 1Mb of disk-cache (expandable to 8Mb); 5 1/4in 1.2Mb floppy drive; 4Mb of 70ns RAM (SIMMs, 48Mb maximum); 64K of 25ns RAM cache.

Pros: Top performance; upgradable CPU; fine expandability.

Cons: Relatively expensive.

Summary: AST's Premium is an expensive workstation. It's well designed and is one of the top choices as a high-end file server.

FreeFacts ES-04

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Better Images Through Innovation.

MAC

MACINTOSH : A complete version of **Adobe's PhotoShop**, providing users with the ability to produce high quality four colour separations.



MICROTEK MSF-300Z/ZS Colour Grey Scanner

The MSF-300Z/ZS scanner is a flatbed scanner designed to handle colour, greyscale and B/W reflective artwork and photos. In colour mode the scanner will scan at 300 dpi and recognise 24 bits per pixel. If you don't have a colour application, the 300Z will recognise 256 shades of grey. Finally with a popular Optical Character Recognition (OCR) package the user can eliminate the tedious task of re-typing existing documents.

MICROTEK ScanMaster 1850

A 1850 dpi Slide Scanner for under \$6000.

The Microtek ScanMaster is a 35mm slide scanner that is capable of scanning at resolutions up to 1850 dpi. The ScanMaster captures 24 bit colour as well as 8 bit grey-scales.



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IBM PC ATs and Compatibles/IBM PS/2s : U-Lead's **PhotoStyler**. Designed to break the price barrier to affordable true-colour image processing for the PC, PhotoStyler provides advanced retouching, editing and colour separation capabilities.

The IBM logo is displayed in its signature blue diamond shape with the word "IBM" in white capital letters.

MICROTEK MS-II OCR Scanner

Introducing the first affordable scanner designed with OCR in mind. The MS-II comes standard with an automatic document feeder which allows multiple pages of text to be scanned unattended. The tedious task of re-entering your existing documents has just been made quick and easy. All of the most popular OCR packages fully support the MS-II, providing an ideal solution for re-entering text into your PC, PS/2 or Macintosh. Special OCR bundle packages available.

MICROTEK True Laser

Microtek's TrueLaser incorporates Microsoft's new page description language, TruImage. TruImage includes TrueType, the same font technology that will be incorporated into System 7.0 and Microsoft Windows thereby providing true WYSIWYG display and faster display and printing results. TrueLaser also offers Adobe Postscript compatibility so current users can continue to print all of their Type 1 and Type 3 fonts. For even more versatility, TrueLaser provides PCL emulation as well.

TrueLaser includes two Megabytes of DRAM which can be upgraded to 3 or 6 Megabytes. This unique combination of processing power results in output two to three times faster than 68020 based PostScript printers and ten times faster than 68000 based PCL printers.



PRODUCT COMPARISON

486 COMPUTERS

PC WORLD

REPORT CARD

33MHz 486 EISA COMPUTER

Compaq DeskPro 486/33L

| Criterion | Score |
|---|--------------|
| Performance | |
| CPU-intensive applications | Excellent |
| Disk-intensive applications | Excellent |
| Software compatibility | Excellent |
| Expandability | Excellent |
| Documentation | Very Good |
| Setup | Very Good |
| Serviceability | |
| System design | Very Good |
| Upgradable CPU; expensive proprietary memory modules. | |
| Support policies | Poor |
| Value | Satisfactory |
| Final score | 8.4 |

PRODUCT SUMMARY

Company: Compaq Computer Australia Pty Ltd; 100 Harris St; Pyrmont NSW 2009. Phone: (02) 660 0077. Fax: (02) 660 3120. **List price:** \$34,384 for test configuration; sold through dealer channels.

Features: 33MHz zero-wait-state 80486 CPU, speed switchable; EISA bus; VGA adaptor, two serial, one parallel, one mouse port built-in; Weitek maths coprocessor support; 300-watt power supply.

Peripherals: Enhanced keyboard.

Storage and memory: 650Mb Maxtor hard disk with built-in 1:1 ESDI controller; 1.44Mb 3½in floppy drive; 4Mb of 80ns RAM (proprietary memory modules, 100Mb maximum); 128K of 25ns RAM cache.

Pros: Fine CPU and hard drive speed; upgradeable CPU.

Cons: Proprietary memory modules; dealer-only support; high price.

Summary: High quality system with great performance, would make an ideal file-server or high powered workstation, our only reservation is the high price.

FreeFacts ES-05

PC WORLD

REPORT CARD

33MHz 486 EISA COMPUTER

Skai Profile 486-33MHz

| Criterion | Score |
|-----------------------------|------------|
| Performance | |
| CPU-intensive applications | Very Good |
| Disk-intensive applications | Excellent |
| Software compatibility | Excellent |
| Expandability | Very Good |
| Documentation | Poor |
| Setup | Good |
| Serviceability | |
| System design | Good |
| Support policies | Good |
| Value | Very Good |
| Final score | 7.7 |

PRODUCT SUMMARY

Company: Porchester Computers Pty Ltd; 276-290 St Kilda Rd; St Kilda Vic 3182. Phone: (03) 537 2722. Fax: (03) 537 2490. **List price:** \$21,985 for test configuration.

Features: 33MHz zero-wait-state 80486 CPU, switchable to 8MHz via keyboard or software; EISA bus; two serial, one parallel port; Weitek maths coprocessor support; 330-watt power supply.

Peripherals: Enhanced keyboard; 16-bit VGA adaptor; Myplex Ethernet adaptor.

Storage and memory: 330Mb Maxtor hard disk with Myplex SCSI 1:1 controller fitted with 4Mb of disk-cache (expandable to 8Mb); 1.44Mb 3½in floppy drive; 8Mb of 80ns RAM (SIMMs, 32Mb maximum); 128K of 25ns RAM cache.

Pros: Blazingly fast hard drive performance; great expandability, supplied standard with Ethernet adaptor.

Cons: Poor documentation.

Summary: The Skai with its fast hard drive would make an excellent file-server, the standard Ethernet adaptor shows that Porchester Computers have positioned the system accordingly. Overall system throughput was the highest of the four tested and the system is reasonably priced.

FreeFacts ES-06

PC WORLD

REPORT CARD

33MHz 486 ISA COMPUTER

Total Peripherals 486/33

| Criterion | Score |
|-----------------------------|--------------|
| Performance | |
| CPU-intensive applications | Very Good |
| Disk-intensive applications | Good |
| Software compatibility | Excellent |
| Expandability | Good |
| Documentation | Satisfactory |
| Setup | Good |
| Serviceability | |
| System design | Good |
| Support policies | Good |
| Value | Excellent |
| Final score | 7.2 |

PRODUCT SUMMARY

Company: Total Peripherals Pty Ltd; 2 Short St; Chatswood NSW 2067. Phone: (02) 417 7455. Fax: (02) 417 4772. **List price:** \$8,500 for test configuration (this is street price).

Features: 33MHz zero-wait-state 80486 CPU, switchable to 8MHz via keyboard or software; ISA bus; two serial, one parallel, one mouse port; 300-watt power supply.

Peripherals: Enhanced keyboard; 16-bit VGA adaptor.

Storage and memory: 80Mb Maxtor hard disk with IDE 1:1 controller; 1.2Mb 5½in and 1.44Mb 3½in floppy drives; 16Mb of 80ns RAM (64Mb maximum); 64K of 25ns RAM cache (256K maximum).

Pros: Very inexpensive; small size.

Cons: Comparatively slow in most tests.

Summary: The TP is a bargain priced high-powered workstation.

FreeFacts ES-07

PC Norton Fastback Lotus Tools Utilities Plus Magellan

| | | | | |
|------------------|-------|-------|-------|-------|
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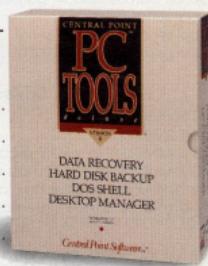
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| 80386SX 16MHz , baby size, Intel chipset, up to 8MB ram on board, LM=18.8 | \$698 |
| 80386 33MHz , 64K cache, ELITE chipset, up to 16MB ram on board, LM=58.7 | \$1792 |
| 80486 33MHz ISA , 8K cache with 128K second level cache, reliable TTL chipset, up to 16MB ram on board, LM=133 | \$4,173 |
| NOTE: C&T-Chips & Technologies chipset LM=Landmark speed test. | |

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|------------------------------------|--------|
| 4464-10 4x64Kbit 100ns DRAM chip | \$2.96 |
| 41256-08 1x256Kbit 80ns DRAM chip | \$2.84 |
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| INTEL 80287XL to 16MHz coprocessor | \$371 |
| INTEL 80387-20 20MHz coprocessor | \$723 |
| INTEL 80387-25 25MHz coprocessor | \$902 |
| INTEL 80387-33 33MHz coprocessor | \$1101 |
| IIT 2C87-12 12MHz coprocessor | \$.... |
| IIT 2C87-20 20MHz coprocessor | \$301 |
| IIT 3C87X-16 16MHz coprocessor | \$448 |
| IIT 3C87X-20 20MHz coprocessor | \$486 |
| IIT 3C87-33 33MHz coprocessor | \$864 |

Memory Cards

| | |
|---|-----------|
| EVEREX XT system ram card, takes your XT computer up to 640K system ram |\$77 |
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| XT serial, parallel, clock, games, FDC | \$141 |
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| | |
|---|-----------|
| TEAC 360KB 5.25" |\$122 |
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| TEAC 1.44MB 3.5" Incl 5.25" mount |\$147 |
| TEAC 720KB 3.5" Incl 5.25" mount |\$128 |
| External floppy disk drive box, cable |\$77 |
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| | |
|---|------------|
| (MA=Maxtor, QT=Quantum, CP=Conner Peripherals, PI=Plus Impulse, IDE kit = drive + hd/fdd controller, mount frame, & cables) | |
| Seagate 20mB 40ms 4Hds x 615Cyls |\$366 |
| Seagate 40mB 25mS 5x977x17Sectrs |\$550 |
| Maxtor 8051A 40mB 28ms 5x977x17 IDE Hard Disk kit |\$442 |
| QT 52mB 10mS* 8x751x17 IDE kit |\$602 |
| PI 84mB 12ms* 10x965x17 IDE kit |\$794 |
| PI 120mB 8ms* 9x813x32 IDE kit |\$1101 |
| PI 170mB 8ms* 10x968x34 IDE kit |\$1280 |
| PI 210mB 8ms* 13x873x36 IDE kit |\$1408 |
| PI 80mB 10ms* SCSI LPS |\$883 |
| PI 120mB 8ms* SCSI LPS |\$1075 |
| PI 170mB 8ms* SCSI LPS |\$1331 |
| Fujitsu 2261SA 352mb 16ms SCSI |\$2611 |
| Fujitsu 2263SA 660mb 16ms SCSI |\$3642 |
| Plus HardcardXL 50mB, 17mS |\$800 |
| Plus HardcardII 80mB, 19mS |\$1190 |
| SYQUEST 44mB 20ms removable HD |\$755 |
| SYQUEST 44mB removable cartridge |\$160 |
| External HD box, cable, power supply, and MFM slot adapter |\$199 |

* effective access time with cache

Disk Drive Controllers

| | |
|--|-----------|
| (WD=Western Digital, HDC=hard disk controller, FDC=floppy disk controller) | |
| XI/AT Quad FDC for 4 of any of the 360K/1.2M/720K/1.44M type FDS |\$96 |
| DTC5150 MFM HDC for XT |\$83 |
| DTC5160 RLL HDC for XT |\$109 |
| WD1006MM2 1:1 MFM HDC + FDC |\$237 |
| WD1007SE2 ESDI HDC + FDC for AT |\$384 |
| ADAPTEC SCSI for 6HD+2FD+TAPE |\$550 |
| IDE HDC, FDC, 2 serial, parallel |\$122 |

Tape Backup

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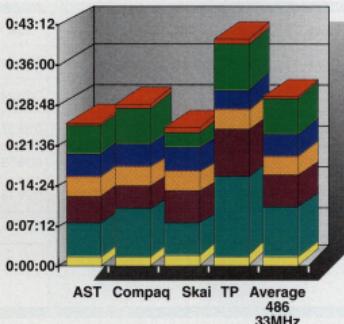
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From page 50

We remove each system's motherboard and examine both sides carefully. We pay close attention to how well the printed circuit boards are soldered — a substandard job can severely shorten the trouble-free life of any computer system. We also look for excessive last-minute changes — a sign of planning problems. The system must be rugged enough to withstand the punishment of shipment and everyday use.

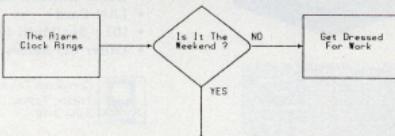
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|---------------------|---------|----------|---------|-----------|----------|-----------|---------|-------------|-------------|---------|
| AST | 0:08:59 | 0:16:12 | 0:01:48 | 0:06:21 | 0:04:55 | 0:03:04 | 0:03:40 | 0:04:56 | 0:00:27 | 0:25:11 |
| Compaq | 0:09:02 | 0:16:22 | 0:01:45 | 0:08:35 | 0:04:47 | 0:02:57 | 0:03:26 | 0:06:00 | 0:00:54 | 0:28:24 |
| Skai | 0:09:23 | 0:14:14 | 0:01:58 | 0:06:06 | 0:05:02 | 0:03:00 | 0:03:36 | 0:03:06 | 0:00:49 | 0:23:37 |
| TP | 0:10:07 | 0:29:52 | 0:02:10 | 0:14:12 | 0:06:55 | 0:03:05 | 0:03:50 | 0:08:45 | 0:01:02 | 0:39:59 |
| Average 486 33MHz | 0:09:23 | 0:19:10 | 0:01:55 | 0:08:48 | 0:05:25 | 0:03:02 | 0:03:38 | 0:05:42 | 0:00:48 | 0:29:18 |
| Average 486 25MHz | 0:12:10 | 0:34:13 | | | | | | | | |
| Average 386 33MHz | 0:17:57 | 0:31:36 | | | | | | | | |
| Average 386SX 16MHz | 0:48:20 | 1:16:43 | | | | | | | | |

the channel, number of units being purchased, vendor or channel promotions, and numerous other factors; the education market discount sometimes reaches 40 per cent.

However, some vendors sell only directly or via mail order. For their systems, list price and street price are the same.

We approximate this "real world" factor by subtracting 25 percent from the list price of dealer-sold systems for the purpose of determining their value score against systems

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NEXT MONTH:**Product Comparisons**

- 486 Computers, part 2
- LAN Operating Systems



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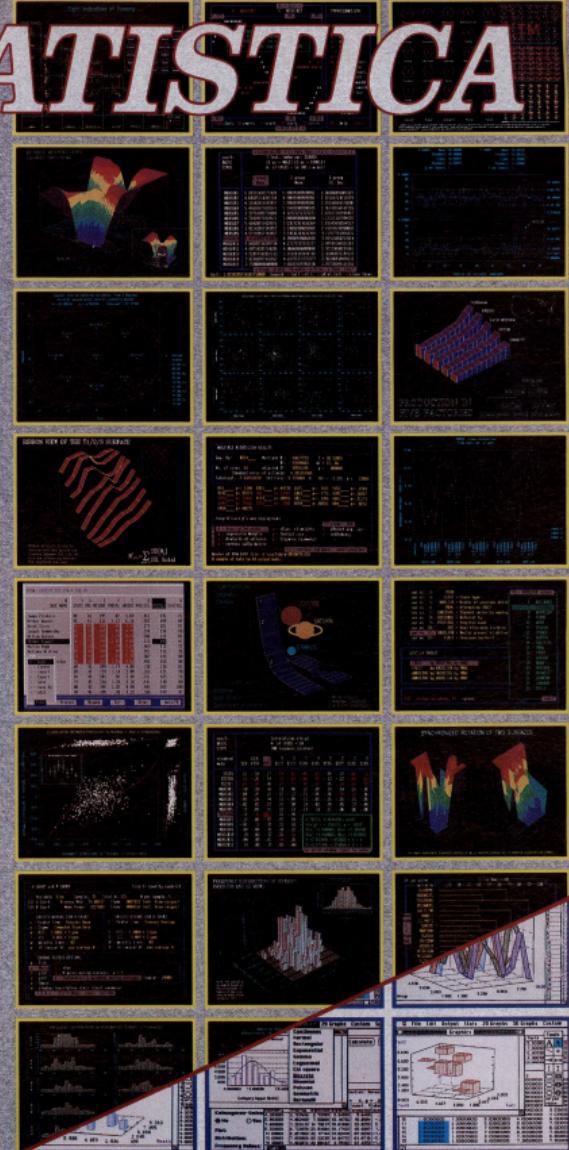
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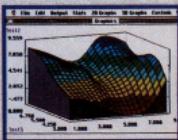
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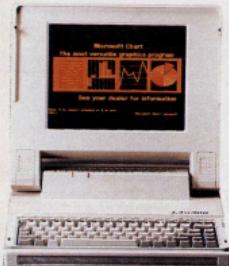
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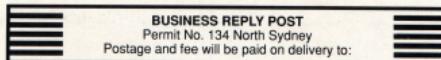
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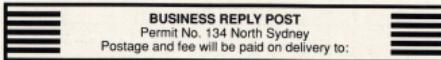
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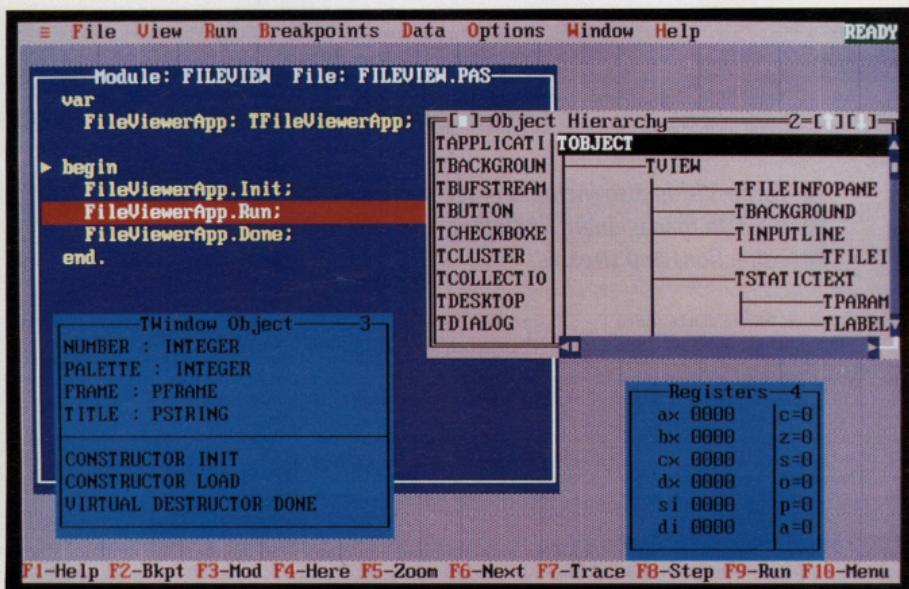


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enhanced features and bug fixes. It also adds support for the Windows API and includes a new memory manager. The new IDE provides better support for object-oriented programming and includes a debugger and a profiler.

Borland's Turbo Pascal 6.0

Version 6.0 of Turbo Pascal, Borland International's flagship product, introduces some significant enhancements to the supplied environment and tools, but few changes to the language itself



The most obvious change in version 6.0 is the new Integrated Development Environment, with overlapping windows and mouse support

Borland offers Turbo Pascal as a separate package, or as part of the Professional package, which also includes the stand-alone Turbo Assembler, Turbo Debugger, Turbo Profiler, and the new Turbo Drive

compiler. Turbo Drive runs in protected mode and uses extended memory to compile extremely large programs. We looked at the Professional package.

In the previous version, 5.5,

Borland introduced object-oriented features to Turbo Pascal.

The most obvious change in 6.0 is the new Integrated Development Environment (IDE). Completely revamped, it now looks just like the

TURBO PASCAL 6.0

IDE supplied with Turbo C++ 1.0. The IDE includes mouse support, as well as multiple overlapping windows, cut and paste, and a new on-line help system that features examples for almost every function.

Just as significant an addition to Version 6.0 is Turbo Vision, an object-oriented application framework and library that provides support for mouse handling, dialogues, menus, windows, and help management.

Language changes include a true in-line assembler, enforced data encapsulation via private fields and methods, and the capability to call functions as procedures. Turbo Pascal, however, does not yet support Windows 3.0 or Presentation Manager.

FEATURES

The most significant language change to Turbo Pascal is the addition of private fields and methods. In 6.0,

ables, and constants. Using the new IDE's copy and paste capability, you can conveniently copy parts of these right into your program.

PERFORMANCE

Programming environment: Turbo Pascal 6.0 is an extremely fast single-pass compiler. Borland claims a compile speed in excess of 85,000 lines per minute. With very few exceptions, older applications should re-compile with Version 6.0 without any problem.

Turbo Pascal consists of an integrated environment with access to the editor, compiler, and debugger. Borland provides two command line compilers: a normal compiler, and the Turbo Drive Compiler (available in the Professional package only) that works in protected mode using extended memory. The protected mode compiler allows you to compile much larger programs.

Borland has removed limitations from the editor, too. Previous releases of the IDE limited the size of your source code files to 64K. They can now be up to 1Mb, or 32,767 lines, in size.

Borland has greatly improved the programming environment by revamping the IDE. We rate Turbo Pascal's programming environment excellent.

Language extensions: Turbo Pascal 6.0 has a vigorous set of language extensions, the most prominent in this release being Turbo Vision. Other extensions include seven predefined units, System, DOS, Graph, Overlay, CRT, Turbo3, and Graph3.

Turbo Vision is a library composed of objects that create a complete event-driven applications framework. It contains all the code necessary to build a comprehensive mouse-driven text-mode user interface. In fact, the Turbo Pascal IDE was created using Turbo Vision. Borland includes such objects in Turbo Vision as windows, scroll bars, menus, radio buttons, and check boxes.

For a programmer unaccustomed to event-driven processing, it will take a bit of study to become comfortable with Turbo Vision's approach. It revolves around Views. A View may be any item your program puts on the screen, such as menus, status bars or dialogue boxes. You initialise View objects and enable them to handle required events.

All user input passes through Turbo Vision's handler, which in turn generates the proper event and passes them along to your View objects. Each View object has an opportunity to accept and process an event, or pass it along to the next View object. There are also "broadcast" events that are sent to every object and "message" events for inter-object communication.

Turbo Vision also includes objects for data management, including collections and streams.

You cannot liken Turbo Vision to one of the many toolbox-type products available. With a toolbox, you may pick a desired object, pull it out, and use it. Not so with Turbo Vision

Turbo Vision also includes objects for data management, including collections and streams

a new directive, Private, can be added to an object's definition. All methods and fields defined after Private may be accessed only from within the unit containing the definition. Private enforces strict OOP principles, which state that you should never refer to an object's fields directly.

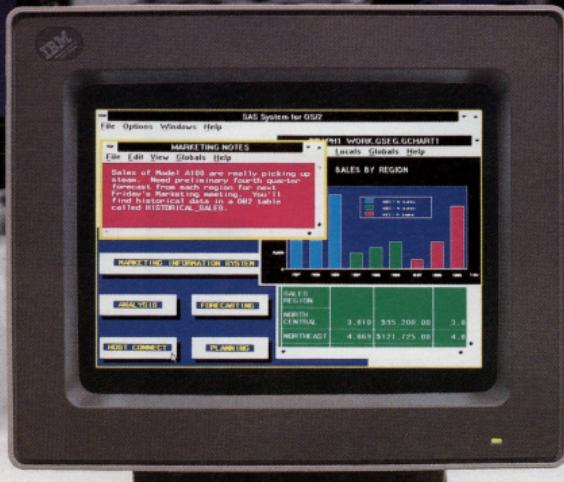
This release finally includes a true in-line assembler, allowing you to use standard mnemonics, instead of counting out raw hex machine instructions. You simply enclose the in-line assembler code between the new reserved words ASM and END. You can use this construct anywhere you would use a compound statement.

Other new language features are a better heap manager, the capability to call functions as procedures, and 80286 code generation. The expanded on-line help facility now has examples available for almost every function, including full references for Turbo Vision objects, methods, vari-

It does not, however, give you the capability to create programs that operate in protected mode. The compilers are single pass with built-in linkers. Using the option of compiling to memory instead of to disk greatly increases the compilation speed, but limits the size of program you can compile.

The IDE provided in this release is completely different from that of Version 5.5, introducing programming environment features and capabilities that bring it up to par with those of Microsoft's Quick Pascal 1.0. A common user access-compliant desktop, the IDE provides full mouse support and multiple windows.

The IDE now makes full use of EMS to increase performance and capacity. Up to 400K of EMS can be used by the IDE for overlays, buffers, and other system resources. This will increase the workspace for your program.



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— it's a tightly integrated package with its components highly interwoven. This results in remarkably small code for a package of such power, but restricts you to adhering to Turbo Vision's philosophy of screen appearance.

Turbo Pascal's run-time library is the System unit, which every Turbo Pascal unit or program automatically uses. It provides low-level support routines. The DOS unit provides operating system and file-handling capability. Borland supplies the Graph unit, with over 50 routines capable of handling most graphics functions your program may need.

Should your program grow to an unmanageable size, you can use the Overlay unit to partition it at the unit level. The Overlay manager is based on the Virtual Runtime Object-Oriented Memory Manager (VROOMM) technology Borland employs in its Turbo C++ (and in Quattro Pro). It is easy to use, and as

long as you obey the few rules involved you don't even need to recompile a unit to make it an overlay.

The program that uses the unit decides whether it is to be overlaid. You should use the cathode ray tube unit to speed up your screen output. If you do not use it, all screen output proceeds via the slow DOS route. With the display unit, you have the choice of sending the output via the faster BIOS path or the even faster method *f* directly to video memory. It also gives you full control of screen mode, colours, windows, and sound.

The Turbo3 and Graph3 units are specially designed for users who have programs written in Turbo Pascal, Version 3.0. They provide an easy conversion path by supplying functions that no longer exist, or whose usage has been changed.

All that we missed in language extensions is support for Windows and Presentation Manager. Borland is working on a Windows version of

Turbo Pascal, which it plans to release during the first half of this year. Language extensions are very good.

Debugging: Borland supports full source-level debugging via the much enhanced integrated debugger in the IDE. Many of the features formerly found only in the stand-alone Turbo Debugger are now included in the integrated debugger. Breakpoints can now have pass counts in which the breakpoint is not activated until it has been passed a predetermined number of times. Conditional breakpoints that break only when a specified condition is true are also included.

To aid in the debugging of in-line assembler code, the new Registers window displays the contents of all CPU registers and flags after each single-step taken by the integrated debugger. Turbo Vision applications can be debugged using the integrated debugger by setting a breakpoint on your Handle Event method. Debugging problems that you cannot handle with the integrated debugger can be transferred to the still-more-capable stand-alone Turbo Debugger, included with the Professional package. Debugging is excellent.

OOP implementation: Borland's object-oriented extensions are derived from Turbo Pascal's record or unit structure, with the addition of "object types". Turbo Pascal implements the OOP concepts of abstraction, polymorphism, inheritance, and encapsulation.

The significant enhancement offered by Version 6.0 is the concept of "private" fields and methods. This allows you to enforce encapsulation, whereas formerly only good OOP coding practices regulated encapsulation. In addition, the new Turbo Vision supplies class libraries, which were missing in the previous version. For these bonuses, we raise Turbo Pascal's score from good to excellent for OOP implementation.

DOCUMENTATION

Borland delivers four manuals that it re-wrote for Version 6.0: its Users' Guide, Programmers' Guide, Library Reference, and Turbo Vision Guide. In addition, the Professional

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package comes with five manuals covering Turbo Assembler, Turbo Debugger, and Turbo Profiler. Extensive on-line help is also available.

The manuals are well organised and provide all the necessary information for a programmer with Pascal experience to use the product quickly.

The Users' Guide describes installation, teaches you the basics of the IDE, and talks about Turbo Pascal programming and units. In the Programmers' Guide, you will find the language definition, a cross reference of library routines, a section on in-line assembler programming, and

Extremely rapid compiling to memory with immediate display of compilation errors shortens the path of program development.

The integrated debugger's enhanced capabilities make for quick error detection and correction without having to leave the IDE. Ease of use is excellent.

ERROR HANDLING

When Turbo Pascal 6.0 encounters a compilation error, it places you in the editor with the cursor at the error location. You then correct the error and re-compile. Because compilation is so rapid, this incremental

Installing Turbo Pascal 6.0 is just about foolproof thanks to a terrific installation

error messages. The Library Reference provides a description of each library function and a good example of its use. Finally, the Turbo Vision Guide has an excellent section on the general concept of Turbo Vision, as well as a tutorial style introduction. Documentation is excellent.

EASE OF LEARNING

Installing Turbo Pascal 6.0 is just about foolproof thanks to a terrific installation program. The integrated environment, tutorial, and on-line help facilities quickly ease a new user into productivity. Turbo Pascal's printed documentation, while designed for programmers with previous Pascal experience, is written clearly enough and has enough concrete examples to prevent a beginner from drowning in a sea of information. Users making the transition to OOP should also find the manuals helpful. Ease of learning is very good.

EASE OF USE

The new IDE, with its full mouse support and seamless integration of editing, compiling, and debugging facilities, makes Turbo Pascal 6.0 a splendid programmer's tool.

error-by-error compilation is not objectionable.

If you encounter a logic error in the compiled program, you can use Turbo Pascal's built-in debugger to correct it. Error handling is very good.

SUPPORT

Borland provides unlimited, free technical support. Support policies are very good.

VALUE

Turbo Pascal 6.0 on its own is priced at \$210; the Professional package retails for \$410. Language tinkerers interested in peering into the underlying mechanics of each included Turbo Pascal object can purchase run-time library source code for an additional \$210. Upgrades for registered owners of Turbo Pascal are \$125.

Both the basic and the Professional packages provide plenty of programming bang for your buck. The new IDE and Turbo Vision lift Turbo Pascal 6.0 above the rest of the crowd. The package is robust and rock solid. We rate it excellent for value. ■

PC WORLD

REPORT CARD

OBJECT-ORIENTED PROGRAMMING LANGUAGE

Turbo Pascal

VERSION 6.0

| Criterion | Score |
|-------------------------|--------------|
| Performance | |
| Programming environment | Excellent |
| Language extensions | Very Good |
| Debugging | Excellent |
| OOP implementation | Excellent |
| Documentation | |
| Error handling | Very Good |
| Support policies | Very Good |
| Technical support | Satisfactory |
| Value | Excellent |

PRODUCT SUMMARY

Company: Borland Pacific, Level 2, 15 Orion Rd, Lane Cove NSW 2066. Phone: (02) 418 330

List price: \$210; Professional package, \$410 (includes Turbo Assembler, Turbo Debugger, Turbo Profiler, and Turbo Drive compiler).

Requires: IBM PC, PS/2, or compatible; 256K for command-line compiler, 512K for integrated environment; 1Mb of extended memory for the Turbo Drive compiler; 3.5Mb of disk space required to install the entire environment; Turbo Assembler, Turbo Debugger, and Turbo Profiler require another 3.7Mb of disk space.

Pros: Seamlessly integrated programming environment with editing, extremely fast compilations, and debugging providing avenues for high productivity.

Cons: Lacks support for Windows 3.0 or Presentation Manager.

Summary: Borland has taken an already impressive product and further refined it. The new IDE is all anyone could ask for, and Turbo Vision alone is worth the price of the package.



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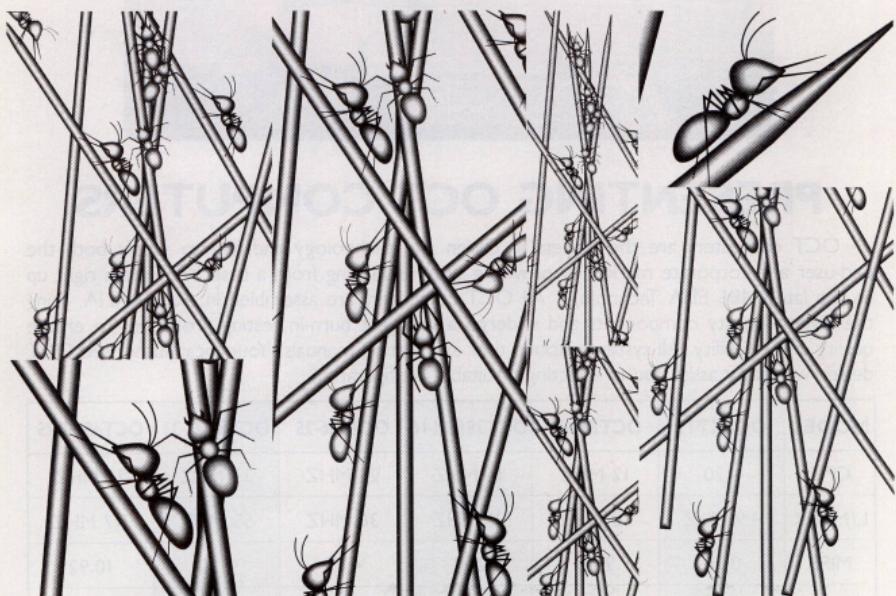
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Project management software, part two

The PC World Test Centre has tested six mainstream project management packages to keep you on track. In this issue, we bring you the results of testing Project Scheduler 5 version 1.0, Superproject Expert version 1.1, and Time Line version 4.0

By Mike Heck and Steven Turvey



With increased connectivity and the use of shared resources, managers trained in project theory are finding they need more elaborate software tools to monitor large projects. They are also finding that ease of use is a very

important factor when deciding which package to purchase. In the April issue of *Australian PC World* we tested Harvard Project Manager version 3.02, Instaplan 5000 version 2.0, and Microsoft Project for Windows version 1.0. Here we con-

tinue the report on the final three packages.

The final result is discussed in the executive summary. For information on how we tested project management packages, see the April issue of *PC World*.

Project Scheduler 5 version 1.0

Two years ago, Project Scheduler 4 set the standard for graphical project management systems by blending power, speed, and simple operation. PS4 Version 2.0, introduced at the end of 1989, increased capacity to 2,000 tasks per project and 500 resources, and added better multiproject tracking and reporting (up to 500 independent schedules, each with 2,000 tasks, can be loaded using EMS memory). Project Scheduler 5, the newest incarnation of this program, offers a sweeping range of new features, the most important of which is true workgroup connectivity.

FEATURES AND FLEXIBILITY

Project Scheduler 5's appeal starts with an interface that is similar to Windows and GEM. Processing is quick and recalculation is always active. You generally work in the Gantt or PERT views — with additional data entry templates displayed at the bottom of the screen.

Although you can't resize windows, each has a separate menu and operates independently (there's also a main menu bar for overall control).

The interactive Gantt and PERT displays are better than in the previous version. You can adjust a task's duration, percent complete, and start date using the mouse. There are also other Gantt chart improvements. The time scale will display actual dates or generic periods relative to starting point. This is useful for counting down to commencement date, for example, and then counting up as the project progresses.

Jobs on the Gantt chart can be annotated with dates and text. Significantly, these annotations are automatically added to clearly defined summary bars and milestones on a single Gantt time bar. Additionally, a project overview line is available at the top of the Gantt chart. You can mark individual tasks or milestones for call-out in both overview or summary bars.

Project Scheduler has supported WBS and OBS codes from early on. Now, there's an organisation tree chart. This is noteworthy because the tree can be automatically generated from WBS or OBS codes, then edited, and new codes regenerated from the new structure.

Project Scheduler 5 doesn't have a traditional outline function. However, the tree structure orders and indents the Gantt chart and job listings — then data can be rolled up into summary bars using filtering options.

Like the Gantt chart, the PERT network is highly interactive and informative. Nodes on the PERT network can be connected by dragging the mouse either to or from a successor.



Project Scheduler 5 continues to lead the rescheduling speed race

A new batch reporting function lets you automatically load projects, select preferences, sort jobs and resources, and generate reports — without having to write command macros.

Workgroup connectivity lets people oversee separate projects that might be merged at a status meeting. The resulting group file not only establishes date dependencies between the projects, but it also validates the network logic, so you don't have problems with circular loops. More significantly, each original project is marked with contingent tasks from the other projects.

Other improvements include global editing within the job and resource lists, hammock activities, and the capability to assign costs to milestones. PSS's workgroup connectivity and automatic generation of

WBS and OBS codes are superior. Score: Excellent.

RESCHEDULING/RESOURCE LEVELLING

Required dates and lag time for each task are available. Project Scheduler 5 also provides forward and backward scheduling from an exact project start or end date.

You can model situations where resources start working after a job begins — for a predetermined time. In this case, a resource could also work for a few days, go to another task, and then return to the first job. The program offers a full complement of task relationships plus PERT analysis. Another schedule refinement is five inflation factors that take effect whenever you specify. If the cost of a resource will change during the course of a product, you can enter the date that it will change, and the percentage increase or decrease. It will also automatically recalculate the costs.

You establish common resource groups that any project can draw from. Project Scheduler 5 accommodates multiple projects and sub-projects for levelling.

Project Scheduler 5 offers numerous options to accommodate a project's start or finish date, inflation factors, and PERT analysis. Score: Excellent.

SPEED

Project Scheduler 5 continues to lead the rescheduling speed race. On-screen response after modifying the schedule took one second, the fastest product in our test.

Resource levelling turned in the second fastest time of 1 minute and 57 seconds, which is a laudable improvement over Project Scheduler 4's 14-minute levelling time.

Changing views was extremely quick, requiring about one second. Scrolling, editing task bars or PERT boxes, and changing zoom levels also occurred almost instantaneously. Score: Very Good.

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PRODUCT COMPARISON

PROJECT MANAGEMENT SOFTWARE

REPORTING

Besides entering actual job start and finish dates, you can record true resource use and costs. In both stand-alone and group-linked projects, you see negative slack time. The Gantt chart clearly illustrates the baseline and a job's standing, such as percent complete and float.

Project Scheduler 5 has a good range of text and graphics reports. You receive details about jobs, resources, costs, and project status. Variance reports compare the schedule and budget. Report formats are preset, but you can select data categories and ranges.

Reports are generated for single or multiple projects. For example, a histogram could show resource utilisation over several schedules. The depth of cost breakdown is unusual: the cost-curve graph shows current plan, baseline, actual, and completed costs — as well as costs of selected resources.

Project Scheduler 5 supports common graphics devices. It supports the HP LaserJet Series II printers, PostScript and colour PostScript printers, and HP and Houston Instrument plotters.

Refined printer drivers let you select fonts. Moreover, resource and cost curves are now generated as continuous reports with the same time scale as the Gantt chart for easy comparison. Score: Very Good.

DOCUMENTATION

Project Scheduler 5 comes with redesigned and expanded tutorial and reference manuals. The tutorial introduces features using two sample disk-based projects. You can also review commands in more detail with the reference at hand.

The documentation also has context-sensitive help that fills in any small gaps in the reference. Score: Very Good.

EASE OF LEARNING

Three context-sensitive help settings match your skill level. Although Project Scheduler 5 is a powerful planner, a hand-holding dialogue box accompanies every command selection at the novice level. Experienced

users can request help messages only when needed.

It's not difficult to understand Project Scheduler 5's design methodology. Screens and sub-screen templates function as sensible units and their meanings are self-evident.

Learning to devise a project takes only a few steps. Enter basic activity details, such as duration, in the job form and watch the Gantt chart begin to take shape. Then switch to the PERT view to connect tasks interactively in the proper sequence. Because the graphics are well designed, you are likely to get the logic right the first time.

The tree chart provides another simple way to lay out a project, plus it saves you from investigating WBS codes during the learning phase. Score: Very Good.

EASE OF USE

The workgroup-linking process inserts relevant tasks from other projects into each group's own plan so you can clearly view the connections (but for safety they can't be edited). Typically, the other packages merely

AUSTRALIAN PC WORLD

PRODUCT SUMMARY

PROJECT SCHEDULER 5 VERSION 1.0

Company: Hardman Consulting Pty Ltd; 26 Milton Street; Canterbury; Vic 3126. **Phone:** (018) 33 4341. **Fax:** (03) 596 7953. **List price:** \$590.

Requires: IBM PC or compatible; MS/PC-DOS 3.0 or later; 512K of RAM; hard disk; mouse recommended; graphics adaptor required.

Pros: Fast graphical interface, PERT probability analysis; workgroup features: large capacity; interactive editing on PERT and Gantt charts; very good reporting, scheduling, and resource tracking.

Cons: Several data entry forms.

Summary: Project Scheduler 5 provides the strongest overall performance. While lacking a few on-screen and reporting options, its interactive displays, extensive task and resource controls, and summary reporting stand out.

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pass dates between totally independent projects, without checking logic.

Cut, paste, and four-level sort tools that are available with the tabular job and resource lists make mass changes faster.

Additionally, the PERT chart's five zoom levels are practical because much of the task data is visible at all but the most reduced view. Moreover, moving any number of task boxes, or changing links, takes just a few steps. A new task form (or the task list) lets you select when a job is summarised, hidden, or appears on the project overview Gantt line. You can pack a lot of important scheduling information in the least vertical space — with the minimum effort. Once marked, you never need to annotate tasks or place milestones manually (as with Project for Windows). Score: Excellent.

ERROR HANDLING

Over 200 error messages corresponding to the three assistance modes cover most situations. Messages appear in dialogue boxes,



Project Scheduler 5 runs efficiently on a wide range of computing platforms

along with a warning beep, relating the problem and solution. Logic errors are also noted, such as those that would cause a circular loop.

A one-level undo is offered, and we were unable to delete work unintentionally or to crash the program. Score: Very Good.

SUPPORT POLICIES

Project Scheduler 5 includes unlimited free, but not toll-free telephone and fax support from 8:30am to 5:30pm. Score: Satisfactory.

VALUE

Project Scheduler 5 runs efficiently on a wide range of computing platforms — and did not require extra memory to load our 500-task file. The \$950 price is a little less than the other programs — and you receive more useful features and a simplified interface to access the power. The workgroup capability is ideal in corporate settings. Score: Excellent.

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Superproject Expert version 1.1

Superproject Expert's planning and tracking features are some of the best you'll find in a mid-range package. There are also true PERT analysis, exceptional cost control, and the capability to allocate work unevenly over a task's duration. However, you're penalised with a perplexing interface, crude graphics, and slow levelling time. Sourceware is currently shipping Version 2.0, which was released too late for testing. Many of the features that Superproject Expert 1.1 lacks will be found in Superproject 2.0.

FEATURES AND FLEXIBILITY

Superproject Expert's three modes (beginner, intermediate, and expert) allow you to turn on or off features. In each mode, preferences must also be set to activate desirable functions, such as cost tracking and resource levelling.

Like Harvard, Superproject Expert overflows with ways to view your schedule — from graphical PERT, Gantt, and WBS charts to text-only outlines, tables, and forms.

The outline view is particularly complete; it provides column after column of almost every vital fact about the project. The outline shows the WBS structure, in addition to resource assignments. For easier viewing, resources can be hidden and task groups can be summarised. However, you cannot create specialised layouts.

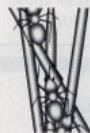
You enter data through the various forms and charts. You might add or edit a task block in the PERT network, or hop to the outline to evaluate cost figures. But some forms are so complex that you will have a hard time determining which fields represent system-generated data, what are defaults, and where to enter your information. Multiple charts cannot be displayed simultaneously, although it is possible to display a histogram that shows a Gantt view.

The program's capacity is superior — 2,800 tasks using EMS — and the

number of resources is limited by system memory.

Resource control is strong. You determine when costs are posted (beginning, middle, or end of a task), overtime rate and maximum hours, in addition to resource priority. Resources work according to individual calendars.

Superproject lets you track your plan by entering the completed portion of a task, either in a percentage or actual hours. Task status is marked in one of six ways, such as scheduled, interrupted, and finished late.



Task boxes move in response to cursor keys, but there is some lag

Superproject Expert is entirely text-based, which makes the graphics weak, just ahead of Instaplan 5000. For example, the Gantt chart uses shaded blocks to represent duration of critical and non-critical tasks, and bars of the same colour to illustrate finish delay and unassigned resources. Score: Very Good.

RESCHEDULING/RESOURCE LEVELLING

Superproject Expert only lets you schedule time in hours, days, or weeks, and there is no start-finish task dependency. Superproject Expert uses sub-projects, but cross-project levelling is not possible unless all projects are loaded into memory. You also can't designate which part of the project is levelled.

Like Project Scheduler 5, Expert provides PERT probability analysis. By entering pessimistic, likely, and optimistic durations and a degree of uncertainty, the program determines how likely it is that a task will be finished on time.

Yet you must be careful when you use probability analysis, because the program will not look at resource

assignments or resource conflicts, which can lead to inaccurate results. It also slows down the program. Superproject Expert shifts tasks based on resource priority, so there's less possibility of unnecessary idle time. Score: Very Good.

SPEED

Superproject Expert was just ahead of Instaplan 5000 with a 9-second recalculation time, the fourth fastest in our tests.

Resource levelling time also finished in the fourth spot requiring 8 minutes and 37 seconds. This longer time reflects Expert's levelling algorithm that does a better job than most programs of optimising the schedule.

Interaction speed is acceptable. Task boxes move in response to cursor keys, but there is some lag. You can page through forms, expand and collapse outline levels and scroll through tables fairly quickly. Score: Very Good.

REPORTING

Superproject includes very complete sorting and filtering. You can organise report columns in any order with three sort levels, and request any range of data.

You graphically print or plot from the Gantt or PERT menus; the printouts use filtering and sort settings, which can be saved and re-used. Superproject Expert supports many colour printers, plotters, and laser printers, but not PostScript devices. The program lets you set graphic resolution, date ranges, and plot size. Graphic quality is better than what you see on-screen. But you can't control placement of information around task bars or PERT nodes — nor can you change symbols on charts (unless you modify the actual printer driver). Certain items, such as critical tasks, are assigned a pen number when you plot, which gives you some freedom in selecting colours.

The default line pattern and

shading are not the clearest, which makes it hard to distinguish between various types of links or a task's status.

Output can be sent to a disk file for processing by the Sideways utility (for printing very wide charts).

Text reports are generally complete. You have tight control over which data appears in the report and how it's formatted. Score: Very Good.

DOCUMENTATION

Superproject Expert's brief ten minute introductory guide provides basic, easy-to-understand instructions about working with a simple schedule. The reference manual is exceedingly thorough but poorly organised. It would be helpful for the documentation to be arranged by the various experience levels. The index also misses some keywords.

On-line help is arranged by topics. You can also display help about the current command with the F1 key. Score: Good.

EASE OF LEARNING

At the beginner level, many of Superproject Expert's features are hidden on the pull-down menus and are not available via direct com-

mands. Thus, new users don't have to deal with options they probably would not use. But even at the novice level, there are 20 preference settings to understand.

Additionally, the many data entry forms and ways of doing things will tend to discourage all but the most dedicated newcomer or mature user. For instance, the same Ctrl-key command means different things, depending on which menu is active.

Therefore, you can't use quick-key shortcuts until you activate one of the main menus, which diminishes their usefulness.

Superproject has many personalities, and it takes time to learn each one. The demo and sample projects help, but this is definitely a program for those with solid project management experience. Score: Good.

EASE OF USE

Without a graphical interface, anything but the simplest PERT network becomes a confused collection of task boxes and connected blocks with limited utility. The zoom option is not much help because the reduced perspective shows little task information.

However, if you're comfortable working with intricate forms and

spreadsheet commands, Superproject may be to your liking. Using the task and resource screens, you can enter large blocks of data. There's a wealth of calculated information on those screens. Calendar screens are probably the easiest of the forms to use. You record work hours and time off in a simple matrix.

**AUSTRALIAN
PC WORLD**

PRODUCT SUMMARY

**SUPERPROJECT EXPERT
VERSION 1.1**

Company: Sourceware; Unit 1, 6-8 George Place, Artarmon, NSW 2064. Phone: (02) 427 7999. Fax: (02) 427 7255.

List price: \$1,095.

Requires: IBM PC compatible, MS/PC-DOS 2.1, 512K of RAM, two floppy drives.

Pros: Many data entry options, including outliner, notable resource scheduling and costing options, PERT analysis.

Cons: Complicated interface, weak graphics.

Summary: Best for more experienced users who need precise reporting and can work with a character-based interface and limited printed graphics.

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PRODUCT COMPARISON

PROJECT MANAGEMENT SOFTWARE

The macro facility lets you create informative screens with an ASCII editor. Macro commands draw boxes, change colours, display help messages, and branch to menus or other sections of the macro. Outline sections are moved with the cursor, and portions of the project can be cloned into a sub-project. There's no way to work with blocks of tasks on the PERT or Gantt charts.

Superproject Expert is harder to use than the other products, because it does not integrate features such as graphics to as great an extent. Score: Good.

ERROR HANDLING

Superproject Expert automatically makes file backups and supports passwords. Network file locking is provided. It catches logic errors and invalid dates, indicating the problem in a pop-up window. However, if you use the automatic resource create option, the program will not warn you if the resource doesn't exist before adding it to the list.

Computer Associates offers a maintenance update that fixes problems with some EMS boards and software emulators. But the program is still picky about how EMS is allocated. Score: Good.

SUPPORT POLICIES

Sourceware provides 12 months

of free, but not toll-free, telephone and fax support between the hours 8:30am and 5:30pm. Score: Satisfactory.

VALUE

At \$1,095, Superproject Expert acts and feels like many higher-priced systems. Resource allocation and scheduling features are robust, but its non-graphical nature and temperamental interface are best left to professionals. If you are oriented towards detail and can work without graphical backup, Superproject Expert gives you a lot of utility for the price. Score: Very Good.

Continued page 78

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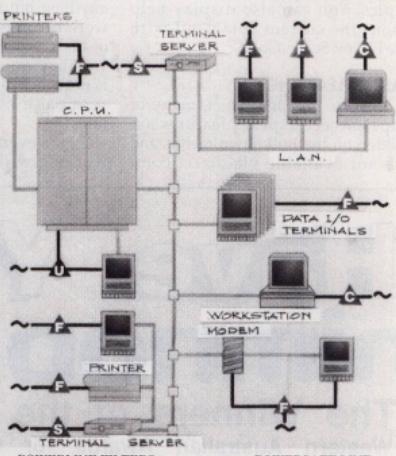
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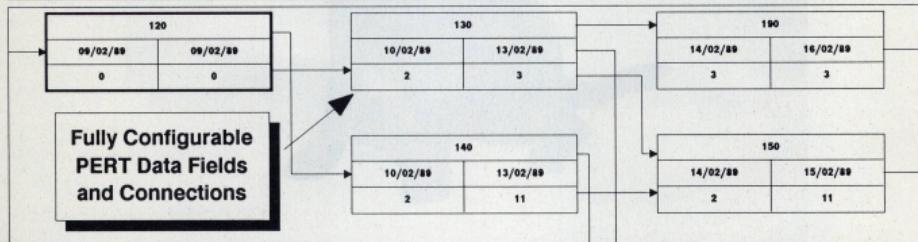
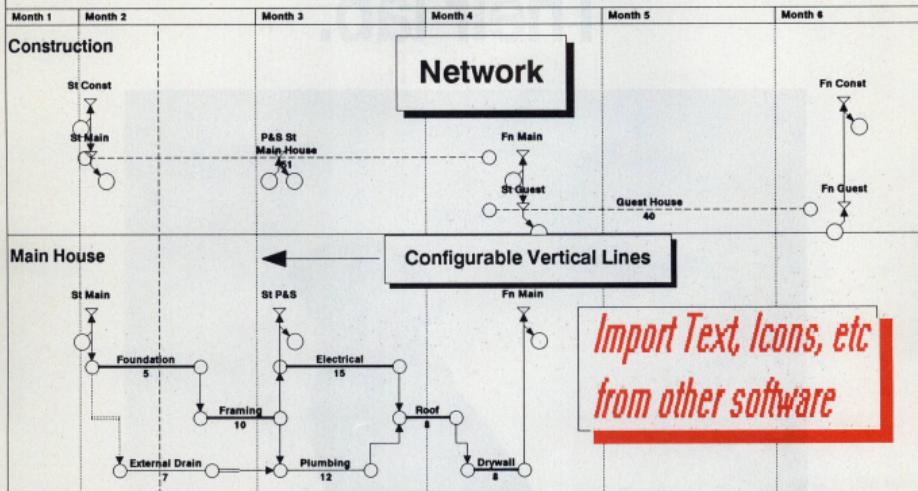
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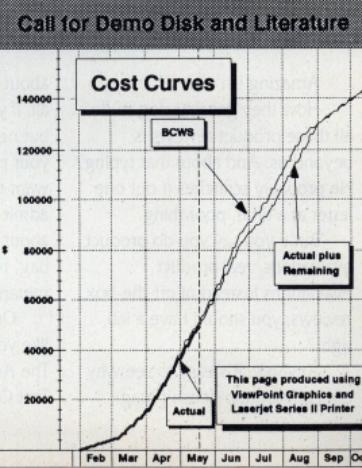
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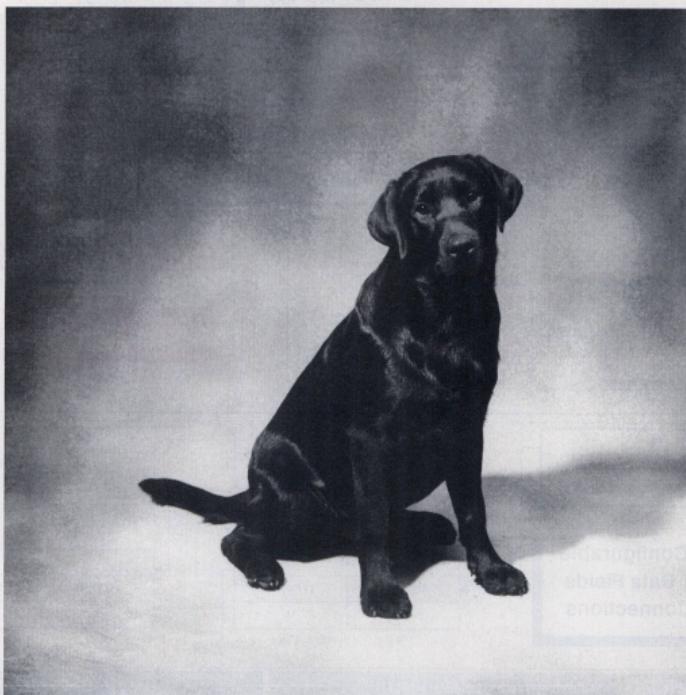
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| Activity Name | Dur | Float | % Cm | 29 | 31 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
|---------------|-----|-------|------|----|----|------------------------------|---|---|---|----|----|----|----|----|
| 800 | 0 | 0 | 100 | | | Design backwash tank | | | | | | | | |
| 100 | 0 | 0 | 100 | | | Pour filter Foundations | | | | | | | | |
| 300 | 0 | 0 | 100 | | | Seamless piping to tank area | | | | | | | | |
| 400 | 0 | 0 | 100 | | | Storage Tank form Excavation | | | | | | | | |
| St Proj | 0 | 0 | 100 | | | | | | | | | | | |
| 110 | 0 | 0 | 100 | | | Filter Support Block Malle | | | | | | | | |
| 810 | 0 | 0 | 100 | | | Excavate Suction Foundations | | | | | | | | |
| 360 | 0 | 0 | 100 | | | Lay intake pipe | | | | | | | | |
| 120 | 0 | 0 | 100 | | | FILL Blend Malle | | | | | | | | |
| 340 | 1 | 11 | 0 | | | Pouring of capping basins | | | | | | | | |

GANTT



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about their testing facility. After all, if you had a dog, a smart dog, but nevertheless a dog doing your product reviews, would you want to broadcast it? (We do admit we feel a little sheepish about letting the cat out of the bag, but there it is, mixed metaphor and all.)

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Time Line version 4.0

With its spreadsheet-style interface and refined features set, Time Line has garnered a loyal following. Although Symantec seems reluctant to abandon Time Line's character-based design, version 4.0 adds mouse support and is the only package compared here that offers CGM (Computer Graphics Metafiles) export to generate presentation-quality slides. What's more, its printed graphics are some of the best we've seen in a mid-range package.

FEATURES AND FLEXIBILITY

Time Line 4.0 shows that a well executed interface doesn't necessarily require high resolution screen graphics. Data entry in this version is easier than in the previous version. You list tasks in outline format in the spreadsheet area adjacent to the Gantt chart — with as many indent levels as required. Highlighting a task then pops up the traditional fill-in-the-blanks task form. Now you have the option of editing some task data in a spreadsheet fashion, bypassing forms.

Time, cost, and work effort are rolled up as you collapse outline phases. WBS codes are generated automatically using your custom numbering scheme.

Three hundred resources are available per project, yet only 24 may work at any one job.

Tasks per schedule are capped at 1,000 (1,600 with EMS). Rather than adding task capacity, Time Line invokes expanded or extended memory to speed levelling. Version 4.0 also incorporates a few other enhancements, such as scheduling resources by the hour and support for extended VGA display modes.

The Layout command selects from several standard formats, such as project tracking, cost analysis, and resource use. Customising options then tailor the Gantt view. Up to 16 columns are available from over 100 options; 20 custom fields can also be defined. Four filters give you additional flexibility to display tasks of

interest. Each layout and filter combination can be saved for future use.

The new macro commands are sophisticated enough to build applications. To show off their prowess, two useful macros are already created — one takes you through constructing a schedule and the other quickly generates graphics.

Another new utility, Assisted Updating, steps you through tasks that should have started as of the current date. The program then brings up the task form and asks if you want to change the task's status to started.

Symantec updated Time Line's import/export with bi-directional connections to 1-2-3, Excel, dBase, and ASCII files. The program is also more friendly in network environments. Time Line could use better resource control and smoother task editing. Generally, though, it provides fully developed features. Score: Very Good.

RESCHEDULING/RESOURCE LEVELLING

Resources may work part time on any task. In this case, work is spread evenly over a task's duration, but you can't enter the day a resource will start, or how long it will work.

Overcommitted resources are flagged in the status column and can be displayed on the resource histogram. You must then decide whether to adjust a task's duration manually or add more resources to stay on target.

If you opt to resolve conflicts automatically, several options are available: Exclude specific resources; use the priority field to give precedence to certain activities; or level only within slack time. In the last case, fixed-date tasks and those on the critical path aren't delayed (over allocations can still exist). Score: Very Good.

SPEED

Time Line 4.0 turned in the second-last recalculation time, requiring 21 seconds to update the schedule after we edited a task's duration. If you leave rescheduling off, a note in the spreadsheet area reminds you to recalculate by pressing a function key.

Time Line's resource levelling time was also on the high side of our results, requiring 5 minutes and 59 seconds. Visual feedback on the Gantt shows the delay resulting from levelling, successor tasks that have to be rescheduled, and where the task would have started without levelling.

The program is lethargic in switching views. You'll wait 35 seconds as a character-formed PERT diagram is generated. The graphic preview is equally time-intensive (plus it won't work if your project has more than a few hundred tasks). Score Satisfactory.

REPORTING

Time Line provides 10 text report types. Printed versions of the Gantt



PRODUCT SUMMARY

**TIME LINE
VERSION 4.0**

Company: PC Extras (distributor only), 86 George Street, Redfern, NSW 2016. Phone: (02) 319 2155. Fax: (02) 698 9926.

List price: \$1,050.

Requires: IBM PC XT, PS/2, or compatible, PC/MS-DOS 3.0 or later, Mono-chrome or colour monitor (CGA, EGA, VGA, MCGA, or Hercules).

Pros: Simple spreadsheet interface, customised layouts that can be edited, built-in high quality graphics.

Cons: Difficult to work with multiple projects and perform cross-project levelling, character-based interface hinders seeing a project's status on-screen.

Summary: Time Line is a solid product, and it is a fine choice if you are comfortable with project management concepts and don't need extremely detailed resource levelling.

FreeFacts ES-10

and PERT reports' on-screen counterparts can also be presented graphically. Previously, you needed the optional Time Line Graphics module to get these graphing features.

In Graphics, you have the flexibility to define borders, line weights, colours, and the position of titles and columns. You can also add labels to task bars.

Text reports include task detail and summary listings, assignments (tasks performed by individual resources or resources assigned to each task), and a Cross Tab Report that shows expenses of either tasks or resources.

By filling in forms, you determine which data fields appear in reports, column width, and other settings such as totals or date ranges.

Time Line supports dot-matrix, laser, and PostScript devices, as well as plotters. Score: Very Good.

DOCUMENTATION

Reference material includes an all-encompassing user manual, a quick reference card, and getting started notes. The large, well-illustrated guide is roughly organised in the sequence you would learn the program. It starts with file management, and advances through estab-

lishing a calendar, building tasks using the outliner, and exploring advanced topics on graphics and macros.

The dual-purpose chapters first introduce you to procedures and then reference all the details about menu options or forms. Score: Very Good.

EASE OF LEARNING

Time Line lowers the barrier to learning with its spreadsheet-patterned menus and layouts. For instance, the program's File-Retrieve command sequence will be immediately recognised by Lotus 1-2-3 users. Project management command options are similarly organised.

Learning is assisted with plenty of spreadsheet layouts. This familiar format should appear less intimidating to new users because scheduling data appear as cells in a worksheet matrix. Time Line 4.0 retains its Gantt display to the right of the spreadsheet so you can always see how changes affect the schedule.

Pop-up windows appear whenever they are needed, and show lists of resources, layouts, and filter settings. Function keys are also noted on forms so there's no need to search through the keyboard template or manual. However, users would bene-

fit from a streamlined procedure to link tasks and interactive editing on the PERT and Tree screens. Score: Very Good.

EASE OF USE

Up to five resource histograms are available at the bottom of the Gantt display, but block graphics limit their usefulness for precision levelling. Character graphics also make it difficult to represent details on the Gantt chart.

You scroll the spreadsheet and Gantt displays with the mouse for access to various data. The spreadsheet expands to show more columns at a glance, but then the Gantt becomes too narrow to be of much use.

The macro system lets you capture keystrokes and later edit them. The resulting code represents each command or cursor movement with a unique identifier. You can create menus that appear during playback and branch to other macros in response to your input.

The comfortable interface that drives a spreadsheet format, coupled with a few forms, gives Time Line high usability. Over-zealous reporting and project linking are Time Line's biggest ease-of-use drawbacks. Score: Good.

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PRODUCT COMPARISON

PROJECT MANAGEMENT SOFTWARE

ERROR HANDLING

Time Line checks to make sure resources exist before it allows you to make assignments. It also validates WBS structures. You can use the WBS manager to renumber tasks, if needed. You're also informed of conflicts when combining projects, including duplicate resource or filter names, and given the opportunity to rename them. There are a minimum of error messages, but problem situations are reported clearly. Time Line still gives you the option to set up to 999 undo/redo levels. Besides recovering from accidental edits, you can also try out various scenarios and always return to previous points. Score: Very Good.

SUPPORT POLICIES

Symantec (the publisher) offers unlimited, but not toll-free, phone and fax support between the hours 9am and 5pm. There is also a 60-day money-back guarantee. Score: Good.

VALUE

By including the graphics module, Time Line 4.0's overall price of \$1,050 is competitive with other programs we compared. Considering presentation-quality output

and preview, the character-based interface seems to be strained. However, the program's basic operation is stable and it includes a solid balance of features. Score: Very Good. ■

Executive Summary

None of these mainstream project management packages have problems handling typical small to mid-sized schedules. But you will find large differences in operation, and how accurately they model resource use, track costs, and format reports.

Project Scheduler 5 doesn't have quite the glitz or on-screen formatting of Microsoft Project for Windows. But it excels in other important areas, including workgroup features, speed, optimised resource levelling, and the quality of information presented. The Gantt summary provides the cleanest overview of what's occurring within a project. The program's useful graphic screens are more interactive, and reporting is improved. Project Scheduler 5 does the best overall job of including desired functions while being generally easy to master and use.

Microsoft Project for Windows is a very close runner-up. Ease-of-use touches such as automatic task sequencing — bolstered by the highly interactive Windows environment — get your project developed quickly. And almost infinite formatting options and on-screen views help present the schedule effectively. Microsoft Project is missing dynamic links to other Windows applications.

Time Line is the best of the character-based project managers. The spreadsheet-like menus and mouse support make its myriad features accessible. The program has on-screen and report customising options — plus macros and good resource assignment capabilities. The system is still slow in areas, and the graphic preview offers no editing commands.

Superproject Expert is more akin to high-end programs, its features akin with PERT analysis, tight resource allocation options, and good cost reporting. Yet the interface is hampered by too many duplicate options and poor on-screen graphics. Superproject Expert truly requires the support available in corporate settings.

Instaplan 5000 bundles a lot of schedule and tracking features while retaining its simple outline and spreadsheet heritage — it handles up to 16,000 tasks. However, the character interface does not support a mouse, nor does it provide complete on-screen PERT display. Missing too are WBS codes, several task dependencies, and report formatting features.

Harvard Project Manager has improved speed and lets you build projects in six different ways, but projects require some modification when switching between entry modes. It makes the most of the character-type interface but is limited in capacity and can't prioritise tasks or projects for more realistic modelling. ■

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Microsoft sets stage for Windows reign

OS/2 relegated to 'high end'. Rift with IBM over system software steadily deepens

By Richard Landry

"**O**S/2 is Dead. Long Live OS/2." Like actors in a royal drama, Microsoft officials in January formally buried OS/2, the operating system that they had hailed as the imminent heir to DOS up until last year. In its stead, they unveiled an ambitious and controversial plan to enhance the Windows operating environment with many of OS/2's most significant features and to build an entirely new version of OS/2 with more resemblance to high-performance network operating systems like Unix than to the current desktop OS/2.

"We want to make Windows the

best it can be" for the vast majority of business users, says Steve Ballmer, Microsoft's US senior vice-president for systems software. Acknowledging that OS/2 sales have come nowhere near predictions made when the operating system was first released in 1987, Ballmer also notes that Windows 3.0 sales have exceeded the company's wildest expectations — 2,250,000 copies in the last seven months of 1990, compared with 300,000 copies of OS/2 from 1987 through 1990.

Most of those copies of OS/2 went to support network-oriented programs (such as Microsoft's own

LAN Manager), and in-house development efforts in large corporations. Meanwhile, Windows 3.0 sales have sparked a boom in off-the-shelf Windows application packages like word processors, spreadsheets, and business graphics. Windows software sales should easily overtake Macintosh software sales this year.

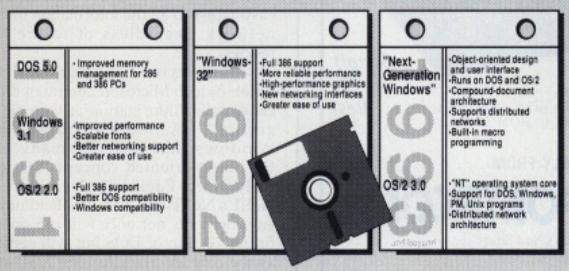
Microsoft, which made about 50 per cent of its \$US1.5 billion in revenues in applications last year, now will push its ambitious Windows plans one step further — despite the prospect of angering IBM, its long-time development partner. "Microsoft has stopped changing its strategy to mollify other companies," says PC Letter editor Stewart Alsop.

WINDOWS ON EVERY DESKTOP

Microsoft officials have outlined a three-pronged plan of attack in which DOS and Windows will assume the role of mainstream desktop operating system. OS/2, meanwhile, will be relegated to high-end uses — for example, network server applications and workstation-level desktop programs.

Sometime after mid-year, Microsoft will release Windows 3.1, which will feature some performance and cosmetic improvements, including built-in scalable fonts. More important, DOS 5.0 will appear on the scene around the same time, providing memory-management features that will improve the way that

Microsoft's Windows-First Strategy



Although the plan will take several years to unfold, Microsoft has mapped out a comprehensive strategy to radically improve Windows and make it the centrepiece of the next generation OS/2 3.0. Time frames are approximate; Microsoft has not committed to specific release dates

WINDOWS UPDATE

WINDOWS REIGN

Windows runs on today's 286 and 386 machines.

In the second half of 1991, Microsoft will start shipping to devel-

found now only in OS/2's Presentation Manager.

When that version of Windows becomes available to users, probably in 1992, software developers will face a dilemma: whether to ignore the environment's new 386-specific features in order to maintain compatibility with 286 PCs, or to take advantage of them in their program and thus begin to part ways with the past. "A lot of companies would prefer to shift into 386 mode," says Russ Werner, Microsoft's general manager of systems marketing. "We'll have to see what the market profile will be."

Windows software sales should easily overtake Macintosh software sales this year

opers an early 32-bit version of Windows that will fully exploit the 386 chip and offer more reliable performance, improved networking capabilities, an easier user interface, and enhanced graphics features

Windows Soars Ahead of OS/2

Worldwide system software shipments in thousands

| | Windows | OS/2 | DOS |
|------|---------|------|--------|
| 1989 | 840 | 150 | 14,100 |
| 1990 | 2000 | 300 | 16,100 |
| 1991 | 3000 | 1100 | 17,300 |
| 1992 | 5300 | 3000 | 17,300 |

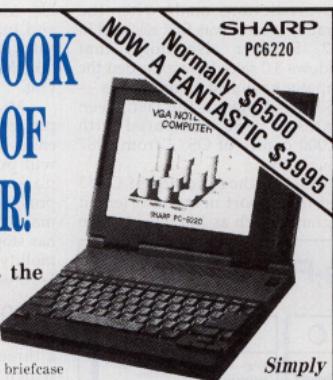
While DOS easily remains the dominant PC operating system software, Windows is becoming far more popular than OS/2 among users seeking graphic environments, according to Dataquest estimates

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this year. But sometime in 1993 or beyond, Microsoft will concentrate on supporting the 386 chip in Windows and release OS/2 3.0. This version will include a new operating system core (called NT, for "new technology") that will run on 386 as well as next-generation RISC processors.

OS/2 3.0 will process data on more than one chip at a time, feature built-in networking, and offer users easy access to all the information on a network, regardless of where it resides.

Windows remains integral to this vision (which Microsoft chairman Bill Gates calls "information at your fingertips"). A next generation of Windows that includes many of the object-oriented concepts found in Hewlett-Packard's NewWave, NeXT's NeXTstep, and Go's PenPoint environments not only will run on a future version of DOS but will serve as the core interface for OS/2 3.0 as well.

Microsoft plans to let Presentation Manager and Unix programs run on top of OS/2 3.0 as well. But it may also release a stripped-down version

of OS/2 3.0, tentatively dubbed "Advanced Windows", that will include only the NT operating system core and the Windows interface. Some observers see "Advanced Windows" as Microsoft's trump card in its contest with IBM for control of operating system standards.

IBM BEGS TO DIFFER

Although Microsoft reports that most developers are enthusiastic about its new operating system strategy, the plan also has its dissenters.

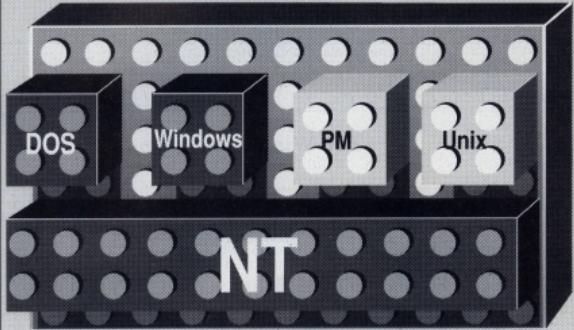
First among these is IBM, which points out that the very features Microsoft is trumpeting for Windows in 1992 will appear in OS/2 2.0, shipping this year.

Moreover, IBM fundamentally disagrees with an approach that encourages developers to bet all their dollars on the DOS-bound Windows interface. "IBM would like to see higher level programming interfaces that are not so sensitive to the operating system," says Lee Reiswig, assistant general manager for programming at IBM's personal systems group. To that end, Big Blue has invested approximately \$US100 million in Patriot Partners, a joint venture with Metaphor Computer Systems formed to build a next-generation computing environment that will permit developers to create programs that run on both OS/2 and Unix.

Nor is IBM pleased with the prospect of a Microsoft-authored local-area network strategy, even if it purports to ease networking headaches for both users and developers. "If Microsoft tries to force LAN Manager as a standard on the industry, there will be a very

OS/2 3.0-Windows by Another Name

The next generation of OS/2 will be built especially to run DOS and Windows



OS/2 3.0 will include a new Unix-like operating system core called NT (for 'new technology'), with 'snap-in' support for DOS, Windows, Presentation Manager, and Unix graphical interfaces. Microsoft may also release 'Advanced Windows', a stripped-down version of OS/2 3.0 that includes only the NT operating system core, the Windows environment, and DOS support

negative reaction," challenges Reiswig.

WILL WINDOWS RUN OUT OF STEAM?

Other developers think that Windows will start showing its age in comparison to innovative work being done by Go, NeXT, and Patriot Partners.

"Windows with DOS will be a victim of its own success," says David Reed, Lotus's chief scientist. "It's an old technology that has to face the issue of compatibility with the past. But within a year or so, Windows will

face new technology that will promote far greater ease of use. It will be hard for Windows to change fast enough to support these new ideas. Ultimately, it will lose its lead."

Still, Microsoft is sanguine about a strategy that pulls today's Windows applications into tomorrow's computing environments. Says Russ Werner: "Windows is truly a phenomenon. If we can move that applications base so that it spans all the way from DOS to high-end systems, then that will be a very powerful story." ■

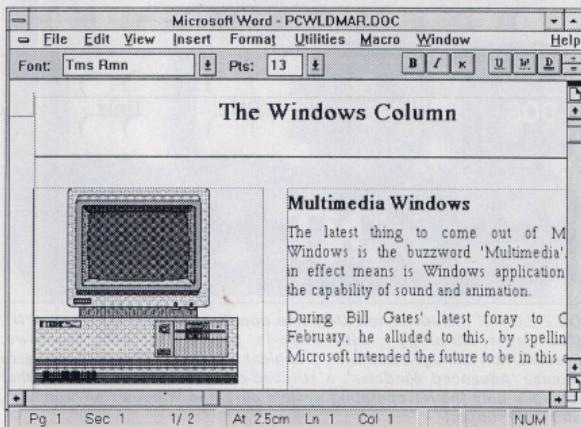
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Word for Windows graphics

By David Hague



Graphics placement in Word for Windows

Many of the support calls I receive are querying the "graphics placement" in Word for Windows. I confess, this is not as simple as it first appears, so I thought as an opener I would cover the basics of placing a graphic in a Winword document.

What we will do is create the document as shown in the Figure. This document is a doctored part of a previous column.

To begin, you would insert the computer logo at the top of a new document. You can do this by issuing the "Picture . . ." command on the insert menu, and choosing the name of the graphic file you want to import, or paste the graphic from the clipboard if you have created it using Paintbrush, Designer or Draw Plus, for example.

After importing the graphic, press ENTER to start a new paragraph, then enter your document text.

Now click on the graphic, to select it, and choose the "Position . . ."

command on the format menu. In the Position dialogue box, choose "Left Relative to Margin" as the horizontal position. Leave the Vertical position set at the default. Next, as the graphic is 6cm wide, set the Paragraph Width setting to 6cm. You may also want to change the "Distance from Text" setting. Here we have set it to 0.6cm. Click OK to close the dialogue box and lock in these settings. Because you have applied a fixed horizontal position to the graphic, Word will wrap text beside it.

Now use the Page View from the View menu to see the text wrap around the graphic. That's all there is to it.

VARIATIONS

Suppose you want the graphic on the right hand side of the page, extending slightly above the headline text and hanging outside the right margin.

To create this effect, select the graphic, issue the "Position . . ." command and type a horizontal

setting of 11cm Relative to Page. Click OK to close the dialogue box and lock in these settings.

Another way to fine tune the position of the graphic is to use the "Boundaries" command from the Print Preview option. By using this command, you can drag the graphic to another position, and the text will automatically flow around the graphic at the new position.

ORGANIZE!

This month's freebie disk is a brand new shareware program from a gentleman named Kwek Sing Sher. It is a personal Information Manager called Organize! and is quite stunning. 720K minimum is required for this one. Remember to send a formatted disk, to mark clearly which month you want the freebie disk for, and make sure your name and address is on the disk.

WINDOWS SPEED

Windows is too slow! How many times have you heard or said that? I will now go against all convention, disagree with my fellow journalists.

Everything I write for PC World is done on a Zenith 286 laptop (16MHz) with 2Mb of memory.

As I write this, I am downloading an 80K file from CompuServe, have Designer running for graphics, using hDC's Windows Express and have my Omnis 5 database ready for support calls. I perceive no lack of response time.

What everyone forgets to tell you is that Windows is *disk* intensive, not necessarily processor intensive.

As such, as long as you have a fast hard drive you will do just fine. Bear this in mind when you buy your next machine. It could save you quite a few dollars! If anybody disagrees, get 'em to call me.

- David Hague is director of Solutions P.O. Box 146 Ashmore City, Qld 4214. Phone (075) 39 5422.

Organise your life

Personal Information Managers, or PIMs, are used for a range of tasks, from simple note-taking or keeping phone lists, to more sophisticated networked functions such as scheduling meetings for workgroups

By David Flynn

The "paperless office"? Hah! One look at your desktop is enough to make you doubt you'll ever see the day. Phone messages, notepads, business card holders, loose scraps of paper and those unavoidable sticky yellow Post-It notes. You bought a diary, appointment scheduler and planner, yet still the paper piles up. Then come those frantic searches for that name, phone number or hastily-jotted "to do" note.

From such hard copy problems springs a software solution — the personal information manager, or PIM.

A good PIM is part database, part word processor and part organiser — a program to keep everything in its place yet ensure it all remains at your fingertips. In fact many of the earlier PIMs were terminate-and-stay-resident (TSR) organisers which once loaded in RAM were just a keystroke away.

As with many other programs, PIMs have evolved through the years. Their first appearance, long before the "PIM" label had been coined, was as a clutch of RAM-resident desktop accessories. This was typified by Borland International's SideKick, one of the earliest, most popular and most cloned TSRs. In a world ruled by vanilla DOS and with multitasking a term foreign to the PC environment, a set of useful utilities which could "pop up" over your favourite word processor, spreadsheet or database was most welcome. Many PIMs of the '90s still share the features of their XT ancestors — an ASCII notepad, appointment calendar, name and address filer, telephone directory and a calculator.

PIMs have also become more

specialised. Some have used the advent of LANs to add networking features such as electronic mail and group scheduling, giving rise to the buzzword "groupware". Others have extended the PIMs' natural usage as a contacts tool to be transformed into applications as indispensable to sales and marketing people as their day timer or fax machine.

If you decide to try life with a PIM you'll want to consider just what features will best match your own needs. If time management and meetings drive your day, look for a powerful scheduler. For sales staff who can't live more than three feet from the nearest telephone, anything from

A good PIM is part database, part word processor and part organiser

a simple address card file to a contacts database will be essential, as well as a simple text editor to churn out letters, orders and invoices. Yet such a notepad would be almost useless for a writer or PR agent who works heavily with words, to whom the diary and card file are secondary.

The following PIMs span typical requirements and applications, and these thumbnail sketches will help you focus on the one that's right for you.

SIDEKICK 2

Like Bic, Kleenex and Polaroid, the name of SideKick has become recognised as much as the generic label for a product line as for an application in itself.

SideKick is accepted as being the

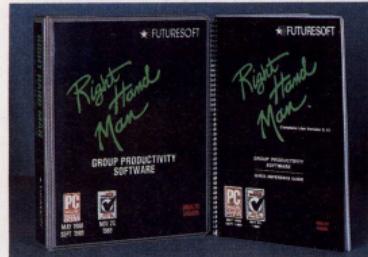


first PIM, and that was well before the term was coined. Borland are far from shy when it comes to SideKick's prominence, trumpeting it as "the world's best PC organiser — over three million copies in use". This isn't exactly the same as saying "three million copies sold", and you begin to wonder if Borland are the first software company to make a marketing plus from possible piracy.

Either way, SideKick is the definitive desktop organiser and in the days when these TSRs were all the rage it was champion. Borland have now unveiled SideKick 2 to tempt a new generation of PC users who expect more features, better memory management and a cleaner interface. And SideKick 2 delivers.

SideKick 2 comprises five applications, the primary one being the Time Planner. Beyond the usual scheduling and to-do functions the Time Planner allows for charting time management, sets both tentative and confirmed appointments features and allows planner schedules and files to be merged — a boon for laptop users who want to use SideKick both in the field and the office and still avoid double-bookings.

The Address Book uses a card file analogy to list contacts, with separate fields for home, business and alternate phone numbers; auto-dialling, and speed dial for frequently called people. You can even send a message direct to a dial-up alphanumeric pager. A similar card system is at the heart of SideKick 2's new Communications module. This provides access to on-line services and



bulletin boards, with basics such as file transfer using ASCII or Xmodem, screen capture and scripting.

One of the biggest improvements for wordsmiths is SideKick 2's Notepad, which has gone from being a jotter to a mini word processor, complete with spell checker, thesaurus, ruler (for setting margins and tabs), alphabetical sort, find/replace and a clipboard-style cut/paste arrangement. (I did miss the handy Outliner of previous versions of SideKick, but it's likely that only the dedicated word crunchers ever used this.) Throw in a choice of basic, scientific, business and programmers' calculators and you have a great package indeed.

All features apart from the Notepad can be shared across a network — ideal for common contacts and schedules; although SideKick 2 does not provide any group scheduling, SideKick 2 can be run in either TSR mode, in which it draws 35K of RAM, or as a stand-alone of 512K. It also makes use of expanded or EMS memory to further enhance its speed.

SideKick 2's interface earns top marks for its pull-down menus, hotkeys, windows (with scroll bars),

mouse support and dialogue boxes, although there are surprisingly few hotkeys and no macro facility to establish your own sets or automate regular actions. At the same time, most of the keystrokes and accelerators mirror those of Borland's Paradox database, Norton Commander and even Windows, so there's little trouble in adapting to SideKick regardless of which environment you've come from.

Print quality is excellent. For years this has been one let-down of many PIMs, however SideKick 2 has taken this head-on and produces crisp and clean hard copy (with the best graphics your printer can achieve) to fit the most common time planners and filofax-clones. There is even support for exchanging data with the Sharp and Casio pocket electronic organisers.

Priced at \$150, SideKick 2 represents terrific value for your software dollar. Contact Borland Pacific, (02) 418 7330.

RIGHT HAND MAN 5.1

When you think about it, an office LAN is the ideal place for a PIM. It means all staff can have access to common databases, schedules and documents, plus the possibility of electronic mail and file swapping.

This is a market which FutureSoft's Right Hand Man has targeted right between the eyes. Version 5.1, distributed locally by ComTech, integrates the power of a PIM with some useful network-oriented features into what is sometimes referred

to as group productivity software or "groupware". And while Right Hand Man does quite well as a single user program, much of its strength lies in the multi-user environment.

Right Hand Man is a RAM-resident arsenal of 26 utilities and applications, including a fully-functional group scheduler. Whereas programs such as SideKick have wrapped all their functionality into a single .EXE file and a handful of overlays, Right Hand Man comprises individual "modules" and associated help and data files which can be removed as desired to tailor the program to specific needs.

The inventory of features is exceptional. Network users will appreciate Right Hand Man's built-in e-mail (which provides for automatic notification of mail, with standard message templates and file attachment); a group scheduler, which searches individual appointment schedules for an open slot of specified time and then automatically notifies all users of the new meeting via e-mail; group address books, again in the index card format; a real-time "chat" facility which accommodates up to five users in one conversation and offers a do-not-disturb option; a phone message centre, file transfer between terminals and a print queue manager. Individuals on a network can also maintain private notepads and a Black Book card file.

Right Hand Man's database is compatible with the dBase format and can be used to import files or convert data records to ASCII. The appointment scheduler combines a calendar and alarms; the to-do list has a search facility, task roll-over from day to day and can set priorities

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and deadlines; while the communications module handles plain text and Xmodem file transfers.

The Editor handles text files up to 60K in length and is complemented by a Notepad for one-off memos, letters and outlines. And what PIM would be without the perennial pop-up ASCII/decimal/hex chart or an array of calculators?

Also welcome is a transfer window, which is like Windows' clipboard or DESQview's Mark and Transfer. It can be popped up over any application and used to copy text or data for pasting into Right Hand Man. The program also has a thoughtful macro record and playback facility.

Right Hand Man uses the "windowing" approach now becoming more and more common in multi-tasking or multiple-application programs. The program is easy to learn, although the menu interface is rather stark and without mouse support. As with SideKick it offers good quality printouts to suit pocket planners. It is also light on RAM requirements, using as little as 4K — an astounding economy not to be lightly dismissed in crowded networks.

Right Hand Man is a great little PIM for the desktop or laptop, especially given the ability to trim it down to size by removing all but the most desired modules; but it is as a LAN tool that it absolutely shines.

Price: \$300 for one user, \$920 for five users, \$3,460 for 25 users, \$9,150 for 100 users. From ComTech Communications, (02) 317 3088.

ACT! 2.0

Contact Software's ACT! is another instance of a specialised PIM

which far outstrips your run of the mill TSR. ACT! is a fully-fledged contact application for the sales and marketing environment with significant upgrading from earlier versions.

In common with SideKick 2.0, ACT! illustrates the evolution of the PIM — moving away from cute PC add-ons towards stronger features, pull-down menus and mouse and printer support. PIMs are in reality a form of database, their complexity cloaked by a simple genre-specific interface, and ACT! is a mighty database in sheep's clothing.

As befits a contact tool, the soul

*If you are serious about
winning the information
war under Windows
then you should look
to PackRat*

and centre of ACT! is an informative "contacts" screen for recording business and personal details, meetings and phone calls scheduled and made. Nearly 30 fields can also be customised to suit your own requirements — anything from personal information (birthdays, favourite restaurants) to business details such as most recent orders and your next target.

The daily routine is organised through a "Lookup" of calls, meetings and to-do's. Lookup can also call up a detailed weekly schedule. This same menu also combs the ACT! records for specified entries in any number of fields, including a complete contact history for each person.

The word processor, while not as sophisticated as that of SideKick 2.0, is nevertheless well up to speed for

most users. It now boasts a spell-checker, cut-and-paste and search-and-replace and much better page layout control, combined with automatic customising of form letters and quality printing. ACT! also offers impressive reporting capabilities.

In fact, almost any task which would fall within the sales day can be handled with considerable ease and efficiency with ACT! 2.0. The calculator, phone dialler, alarms and import/export facilities only add to this remarkable productivity program. ACT! 2.0 is available for \$495 from PC Extras, (02) 319 2155.

PIMs FOR WINDOWS

The inherent multitasking of Microsoft Windows makes PIMs and general on-call applications far more practical compared with pure DOS, where TSRs can often find themselves in conflict with other system resources and programs.

For the complete novice taking the PC path to being better organised, Windows' standard-issue calendar, calculator, notepad and card file desk accessories are easily adapted for the most basic of PIM functions. These can be automatically opened at the start of each session by using the LOAD= and RUN= commands in the file WIN.INI.

Also worth a look is DayBook, bundled free with Windows 3.0 to demonstrate the abilities of Asymetrix' ToolBook object-oriented programming package. DayBook's five modules include a "to do" list, address book and calendars. Unfortunately the application's high dependency on graphics makes

Continued page 89

 CHARISMATEK
MANAGERIAL SOFTWARE

WHEN E-MAIL IS NOT ENOUGH

03 / 696-1255

Until you've learned it, a program's only a plastic disk.



In this magazine are scores of programs which make great promises: they'll make you smarter, swisher, faster, richer.

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From page 87

Daybook painfully and thus impractically slow to run.

If you are serious about winning the information war under Windows then you should look to PackRat, a powerful PIM which combines traditional contact tracking and scheduling with the ability to cast a net across all PackRat files relating to any given subject.

The oddly-named PackRat derives its tag from a large bushy-tailed North American rodent with a propensity for carting away small nick-knacks to use in its nest — a ratty equivalent to our own Bower Bird.

PackRat offers 13 core facilities, accessible through an icon bar or by CTRL+ hotkeys. A phone book stores telephone numbers with an optional notepad text entry, and with each call made or answered PackRat's PhoneLog can record conversation notes and place a follow-up "alert".

Index card stacks can hold up to 32,000 characters and 10 "search" keywords, making them ideal for anything from a rasterised Rolodex to stock listings or a product information file. The day-to-day tasks are managed through PackRat's Agenda, to-do list, scratch-pad, time management and financial accounting facilities, while project and resource management modules take the long view of business.

Index card stacks can hold up to 32,000 characters and 10 'search' keywords, making them ideal for anything from a rasterised Rolodex to stock listings or a product information file

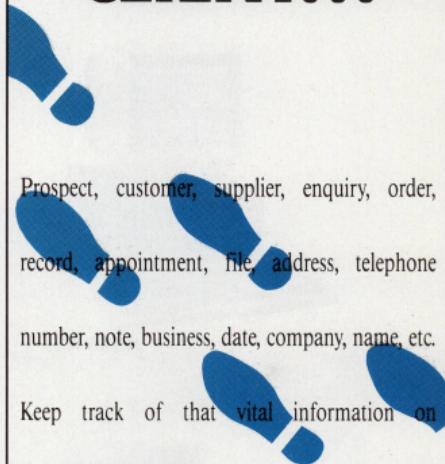
The whole shebang comes together through the Global View which sorts and displays information according to multiple criteria, regardless of the individual module or facility in which this may be located.

In themselves these are desirable for the PIM platform, however PackRat goes a step further in embracing Windows. A "disk file" lists and launches documents created with other applications. Once selected each document can be launched under the original application.

Items can also be attached to other items, projects or even people to simplify project management and costing, while the entire program is easily customised. Information stored in PackRat can be exchanged with the Sharp Wizard and Casio Boss pocket organisers, and DDE principles used to interconnect PackRat with other Windows programs as desired.

A program the size of PackRat will appreciate any spare RAM your system may have to hand, and although it is well-favoured in terms of features, PackRat boasts a good tutorial and a "just beginning" mode to provide new users with more icons, fewer options and a number of automated tasks to ease them into making PackRat part of their daily routine. In all it's a high-powered and comprehensive PIM for Windows, well suited to project workgroups or compulsive organisers. Packrat retails for \$550 from Software Suppliers, phone (02) 888 1955. ■

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DOS TUTORIAL

The FOR command

By Keir Wells

Making life easier is what batch files are all about. There is after all nothing more tedious than entering a series of commands at the DOS prompt and waiting for each one to complete execution before entering the next.

What we are going to deal with this month is a DOS facility which permits us to carry out an operation on a series of files (a file set), using only a single command line entry.

For many of us, the ability of DOS to do this is seemingly limited to the use of the wildcard characters * and ?. For example, if we wished to delete all the files in the current drive or directory with the extension .LTR, we would enter the command:

ERASE *.LTR or: DEL *.LTR.

But what do we do if there are more than just the *.LTR files we wish to be rid of? Let's say that we need to delete all .LTR, .TXT, .DOC and .ASC files. One obvious method is simply to enter a series of ERASE (or DEL) commands as we did above. Whilst this would be totally acceptable, there is a much easier way to accomplish

the end result. All we need do is familiarise ourselves with just one command — FOR.

Unfortunately, quite a few users seem to baulk at using the FOR command because of its strange looking syntax, whilst in reality it requires only the minimum of practice to fully appreciate its power and ease of use.

There are actually two syntax forms of FOR (entered on one line).

1. FOR %%variable IN (set) DO command - (Batch Processing)

2. FOR %variable IN (set) DO command - (Interactive Processing).

It is immediately apparent that the only difference between the two forms is that whilst the batch processing syntax of FOR utilises a double percentage prefix (%%) to the variable, the interactive processing syntax requires only a single (%).

In relation to the above syntax, various DOS texts state that the variable may be any single character except for the numerals 0 through 9, the redirection symbols (<,>, and >>), and the pipe symbol (!). In fact there

are several other characters which are not permissible, including /, =, and ,. Variables are usually letters though, so this should rarely pose any sort of problem.

CASE SENSITIVE

Bear in mind also that the variable is case sensitive i.e. %x is not the same as %X. For example, if the current drive or directory contains three TXT files and we enter the command:
FOR %X IN (*.TXT) DO TYPE %x

at the DOS prompt (in interactive processing mode), DOS would respond with three occurrences of:

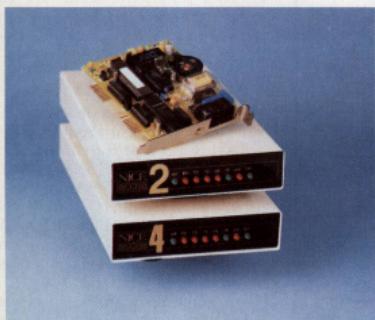
%x File not found.

The set is one or more filenames, pathnames, character strings or meta-characters separated by spaces, commas or semi-colons. Wildcard characters are also permitted. It is the set which provides the filenames upon which the specified operation/command will act. Examples:

(*.*TR, *.TXT, *.DOC, *.ASC)
>(*BAT, %1, C:\WP%2)

The first of these examples is fairly straightforward: We have simply placed all of the file specifications mentioned earlier in the one set.

The second example might appear more difficult to understand. The first element of the set, *.BAT, requires no explanation, but the



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second, %1, may not be as obvious. This is a DOS batch parameter — it is not a variable, hence the use of a numeral.

By using DOS batch parameters we are able to create flexible batch files which accept and act upon command line parameters. A typical use of DOS batch parameters with the FOR command would be a batch file arbitrarily named BULK_DEL.BAT, and containing only the line:

```
FOR %%X IN (%1 %2 %3 %4 %5
%6 %7 %8 %9) DO ERASE %%X
```

With this batch file we could remove the necessity of remembering the correct syntax of FOR in the interactive processing mode and simply type BULK_DEL followed by the list of files we wish to erase, e.g. BULK_DEL *.TXT *LTR *ASC <ENTER>.

A fairly simple way to understand the use of DOS batch parameters is to remember only that the number of the DOS batch parameter corresponds directly to the parameter in that position on the command line. Therefore, in our example above, %1

corresponds to *.TXT, %2 corresponds to *LTR, and %3 corresponds to the *ASC command line parameter.

Experiment: Create a batch file containing the above-mentioned FOR command, replacing the ERASE %%X with TYPE %%X — for safety only — and observe the results. Next, remove the "%" from the FOR command's file set and once again observe the results.

NOTE: DOS batch parameters can only be used in the Batch Processing Mode.

The third element of the example set (C:\WP\%2) displays the use of a pathname in conjunction with a DOS batch parameter.

Finally, the command part of the syntax is any MS-DOS command except the FOR command. The variable name %%variable (or %variable in interactive mode) may be part of the command. Examples:

```
ERASE %X or ERASE %%X
COPY %Z C:\WP
or COPY %%Z C:\WP
```

Logic informs us that if we are able to use any MS-DOS command we must therefore be able to invoke another batch file. The obvious advantage of this is, rather than being restricted to carrying out a single operation on the files contained within the set, we are now able to pass each set element as a parameter to another batch file. Thus we can extend the use of FOR to carry out any number of commands on each of the set elements.

ACCIDENTAL DELETIONS

One of the common complaints you are likely to hear about DOS is its refusal to prompt for confirmation before deleting a file. The exception is when the ERASE *.* command is used. But all too often a simple typographical error is made which results in vital files — which invariably have not been backed up — being erased. Several ways around this are to:

- a) search through the Shareware listings for a suitable utility program,
- b) purchase an expensive DOS

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Continued page 94

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I often have to italicise words in WordPerfect 5.1. To make typing easier, I came up with a macro (see figure 1) that helps me produce italic output. While typing, I surround target words and phrases with double quotation marks. When I'm done, I press <Ctrl>-I, and the macro hunts down all the double quotation marks in the document, replacing them with WordPerfect italic codes.

To create the macro, start WordPerfect and select *Setup Keyboard layout Map*. Move the cursor to the key or key combination you want to assign the macro to, and select *Macro*. To insert basic editing commands, such as {BACKSPACE}, {LEFT}, and {DEL}, press <Ctrl-V>, followed by the appropriate editing key. For other editing or formatting commands, such as {SEARCH}, {BLOCK} and {TO}, simply press the same keys you would use to use the command when editing. Select macro-specific commands, like {DISPLAY OFF}, {LABEL} and {GO}, from the <Ctrl>-<Page Up> macro command menu. Press F7 three times to exit, and save the macro.

— Horst Wetjen

DOS TUTORIAL From page 91

shell, or

c) create your own simple batch files.

Taking the third option to be the best (of course), let's now look at the listings for two batch files — KDEL.BAT and KDEL1.BAT — which go a long way to removing some of the dangers incurred by our excursions into DOS.

Listing 1:

```
KDEL.BAT
@ ECHO OFF
FOR %%1 IN (1% 2% 3% 4% 5% 6%
%7 %8 %9) DO CALL
KDEL1.BAT %%X
```

(Replace CALL KDEL1.BAT %%X with COMMAND/C KDEL1.BAT %%X and remove the leading @ symbol from @ECHO OFF if you are using a version of DOS pre-dating V3.3)

Editor's note: Figure 2 shows a variation that converts italics to bold. Both of these macros will work with WordPerfect versions 5.0 and 5.1.

```
{DISPLAY OFF}
{Home}{Home}{Up}
{LABEL}loop-
{Search}{Search}
{Backspace}
{Block}
{Font}ai
{Left}{Backspace}
{Go}loop-
```

Figure 1: This WordPerfect 5.x macro converts quoted text to italics.

```
{DISPLAY OFF}
{Home}{Home}{Up}
{LABEL}loop-
{Search}{Font}ai{Search}
{Block}
{Search}{Font}ai
{Backspace}{Font}ai{Search}
{Bold}
{Left}{Backspace}
{Go}loop-
```

Figure 2: A variation on Figure 1, this macro converts italics to bold.

REBOOTING THE SYSTEM

The March edition of Star-Dot-

Star showed a program written by Norman Potter (page 129) which was designed to reboot his PC.

The major problem with the program was its use of INT 19H. This interrupt is described as the "bootstrap loader" but unfortunately most hard disk systems seem to install themselves into this sector.

A look at the BIOS listing for the IBM XT shows when <Ctrl><Alt> is pressed, the BIOS sets the "RESET_FLAG" to 1234H and jumps to RESET (FFFF:0000). Put simply, a REBOOT.COM program can be written that does exactly what the BIOS does. The accompanying DEBUG listing for REBOOT.COM should work on all systems and can be used in a batch file to automate system reconfiguration.

```
a
mov ax, 40
mov es, ax
es:
mov word ptr[0072], 1234
jmp ffff:0000

r cx
11
n reboot.com
w
q
```

— Trevor Jones

option, KDEL1.BAT could also be extended to display the contents or directory information of each file before the ERASE %1 command is invoked in order to carry out a double check.

This article has only been a taste of the FOR command and like most other DOS commands, a little practice and experimentation may lead on to more efficient — and potentially less expensive — DOS computing.

For further information on calling batch files and the YESNO.COM program called in KDEL1.BAT, refer to the DOS Tutorial, PC World April 1991 p80, and November 1990, p 111.

If you have a particular problem with the operating system you would like to see dealt with in this column, write to me c/o PC World, 37-43 Alexander Street, Crows Nest 2065. ■

Listing 2:
KDEL1.BAT
ECHO Delete %1 ?
YESNO
IF ERRORLEVEL 89 GOTO
:DODELETE
GOTO NODELETE
:DELETED
ERASE %1
ECHO %1 HAS been deleted!!
GOTO FINIS
:NODELETE
ECHO %1 NOT deleted!!
:FINIS
Typical Usage:
KDEL *.TXT *.DOC <Enter>

For each file which matches the given parameters you will be prompted by KDEL1.BAT for confirmation of the erasure/deletion operation. As an

Build your own token-ring control tools with NetView

By Robert Chagnon and Robert Pavia



Now that internetworked LANs have become the data communications highways of so many corporations, it's vital to know how to manage them. This means not only the LAN, but the entire configuration — the local-area networks and the wide-area network that connects them.

In the realm of internetworked token-ring LANs, three tools will help a network manager survive. This article describes how managers can build these tools, enabling them to monitor extended networks from a single net control centre by using IBM's NetView and LAN Manager Version 2.

We will look at a typical extended LAN — a campus network with a central backbone token ring located in a data centre.

This central backbone is bridged to two other token rings — one in a nearby building and the other in a remote location — each of which is also bridged to local rings on various floors in those buildings.

LAN Manager Version 2 has been enhanced and is soon to be available under the name LAN

Network Manager, but the tools mentioned here can be developed under the existing version of LAN Manager. The three tools are:

- A dynamic monitoring system that displays the network's topology and the status of all token ring LANs and bridges. This system quickly reveals the impact any event has on the network.

- A system that funnels token-ring exception alerts to a single alert processing routine. This routine enables the net manager to assess token-ring network problems in juxtaposition with other net problems. For example, multiple token-ring segments may report problem alerts. At the same time, a link that connects these token rings at an upstream point in the network also reports a problem alert. Network management

becomes easier if the manager understands the interrelationship between these alerts.

- A method for measuring and reporting performance criteria for token-ring bridges. These performance reports — which measure factors such as error rates and throughput — are not provided automatically with LAN Manager Version 2.

BUILDING THE TOOLS

Here are some hints for building these tools using NetView. A simple token-ring network monitor with a topological display can be constructed under NetView using dynamic panels, a Command List (CList) to capture alerts and interface with LAN Manager Version 2, and another CList to display operator panels and message automation table logic to route messages to network operators.

A NetView VIEW panel or set of panels must be defined using variable names physically juxtaposed to convey the physical and logical relationships of the LAN components they represent.

The 3270 panel's physical dimensions, 24 lines by 80 columns, greatly affect the design decisions. If there are more LAN components than the variables that a single panel can accommodate, then the designer must reconsider the level of detail in the topological display.

If, for example, the network contains more token rings than can fit on the panel, perhaps displaying only the backbone ring would suffice.

The network operator could then respond by displaying a panel to monitor the hierarchically subordinate components related to that backbone, such as local rings and bridges.

Alternatively, multiple panels in combination, representing all the components to be monitored, could be automatically displayed in sequence with comfortable pauses between screen changes.

After defining the panel on the NetView panel's library, the system designer must write a CList to obtain status information about the LAN components to be monitored. This CList will run under an AUTOTASK, a user-defined NetView task. An

AUTOTASK is like an operator's session but has no operator. It is started automatically and is dedicated to collecting LAN status information.

First, as part of the CList initialization, the designer must create and define global variables, assigning one to each ring and bridge to be monitored. For instance, the designer may create and assign a variable called DCBCKBNE to the data centre backbone ring. These variables must be identical to those used in the panel definitions.

However, the network manager runs into problems when multiple tools report failure

The next step is to find the current status of the components using the NetView LAN "Network Status" command. The TRAP and WAIT mechanisms for message handling in NetView's Restructured Executive Extended Language CLists may be used to save the status information returned in the command response.

This information will include the status of rings, whether rings are incurring soft errors, are beaconing or are in normal operation, and whether the bridge links are available. If a bridge link is unavailable, the bridge name won't show up in the system's response to the STATUS command. The CList interprets the status information and assigns appropriate colour values to common global attribute variables for each component. For example, a status of "normal" may receive a colour value of green.

After colour values have been assigned, the CList delivers network status information to all operators monitoring the network by sending a message to the message automation table. The automation table then sends an update message that causes the monitor panels of each operator defined in the dedicated broadcast group to be refreshed.

MONITORING

Once the initial status has been gathered and distributed, we're ready to begin monitoring. One simple way to accomplish this is to repeat the STATUS command and the broadcast process in a loop with a built-in delay.

This method also automatically detects a loss in connectivity to the LAN Manager Version 2 workstation itself, via return codes NetView issues in response to the status command.

A more efficient way to monitor for changes in status is to capture alerts from LAN Manager Version 2 using the NetView TRAP and WAIT commands.

The final piece to this monitoring system is a CList that operators execute to display a NetView dynamic panel. A dynamic panel is a full-screen panel that changes without operator intervention. This CList first adds the operator's identification to the monitor system's broadcast group and then, using the VIEW command, displays the NetView dynamic panel.

When the message automation table broadcasts the update message to the operator, the VIEW command's message parameter, called MSG, causes the panel display to reflect automatically any changes in the values of global variables.

For the purposes of this system, NetView acts as the platform for exception alerts to be forwarded from vendor-supplied element managers. These provide an excellent set of diagnostic tools and even topological views.

However, the network manager runs into problems when multiple tools report failure. The net manager's responsibility is to provide the expertise to correlate these failures, a task that requires considerable understanding of both network topology and state-of-the-art telecommunications concepts.

By using NetView as a platform that can correlate alert information from vendor-supplied element managers, automation and analysis of the network as a whole can begin.

NetView is designed to receive

Continued page 99

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From page 96

alert information from two interfaces. The interface that receives Systems Network Architecture alert information is called the entry point interface. SNA alert information is made available to NetView by using the same VTAM communication sessions already established.

The interface that receives non-SNA alert information is called the service point interface. Non-SNA alert information is more difficult to acquire because non-SNA devices are usually not in session with VTAM. IBM's solution is a service point application that translates the non-SNA vendor-specific alert information to SNA Network Management Vector Transport (NMVT) data flows, which VTAM then forwards to NetView.

NetView also provides a command called RUNCMD that sends commands to and receives responses from a non-SNA element manager. In the case of LAN Manager Version 2, you can receive unsolicited alerts from NetView or you can send LAN Manager Version 2 commands and receive responses.

The responses are displayed on the user's NetView terminal, and alerts can be displayed from Network Problem Determination Application, NetView's fault isolation software for IBM hosts. Because the current version of NetView now automates actions to be performed only on messages, alerts must be converted to messages. NetView Version 2.2 will automate alerts. For now, however, the system designer can convert these alerts to messages by using the SRFILTER command, which converts NMVT alerts to NetView BNJ146I and BNJ030I messages. These informational messages indicate that an NMVT alert is logged to the hardware monitor database and the SRFILTER is set to pass the alert.

Unfortunately, SRFILTER does not convert all application-specific alert information to NetView messages. For example, token-ring adapter addresses in LAN Manager Version 2 alerts are not passed along to the messages. If for some reason the omitted information is required, an alternative to SRFILTER is to write

a NetView communication network management interface exit called XITCI. Information on how to implement a NetView exit can be found in the NetView Customisation Manual.

Whether you write an exit or use SRFILTER, your goal is to trigger a CList or command processor to trap and process the alert information. By using the ASSIGN command, you can have the BNJ messages automatically forwarded to a CList that is waiting for alert input. This CList can process in the background as an AUTOTASK that passes the alert message and extracts important information such as resource name and status.

Let's say that the following alerts are being processed by your CList:

BNJ030I 10/02 10:04

PERM ALERT RECEIVED FROM THE FOLLOWING RESOURCE:
RING RING0DC1

BNJ146I 10/02 10:04

G TYPE = PERM DESC = 3215

ALID = 2102FCEB PC = 3703

FAIL = 3703;2010,3301,3101,0105
TEXT = '...(DFIPD202E)' PRID =
5601227

HIER= LANMGRSP,SP,LANMGR,TP,

MAINLAN,LAN,RING0DC1,RING

DOMID = NETVW

A LAN Manager DFIPD202 message indicates that the token ring is inoperative. Your CList can take the resource name of RING0DC1 and the status of INOPERATIVE and save these values.

To do that, you need to set up a table of global variables in which you can store the resource name and status. If the status is not normal, you should store the resource name and status in the next available free global variable. You obtain free global variables by defining them with the GLOBALV command.

If the status is normal, you must have your CList search the table for a

resource name match. If a resource name matches, you need to set the name and status to null value (blank spaces), which marks the global variable as free. Setting the name and status to null will prevent this resource name from being displayed on the exception alert monitor.

Soon you will have a set of global variables, defined in your CList, containing pairs of resource and status information that are in an alert exception state, such as soft-error and beaconing status.

Command processors and CLISTS that NetView operators invoke can now access the information stored in these global variables.

VIEW EXCEPTION ALERTS

Our example of an exception alert monitor is built using the VIEW command enhancements available in NetView Release 3. The VIEW command allows IBM 3270 full-screen colour panels to update without operator intervention. On the panel, you set up the global variables starting in the upper left corner of the panel definition text.

By putting three pairs on a line and with 20 lines per terminal, you can show 60 alert exception pairs on one screen. If a global variable becomes free, it is not displayed on the screen because its associated resource is no longer in an exception alert state. Using the VIEW command, a CList or command processor can display the panel of dynamically changing global variables.

By coding the MSG option on the VIEW command, the system design can cause the panel to update dynamically when a message or command is received.

Matching colour and highlighting with different degrees of status makes this an effective tool for spotting critical problems. For instance, you might want to make downed bridges blink red. Beaconing resources can be yellow.

The network operator can immediately react to colour change, instead of trying to understand the resource names.

Continued page 103

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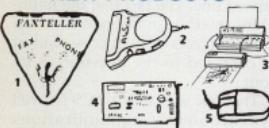
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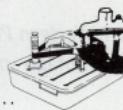
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Hotline to the potline

A new Novell 386 network has set Western Pacific Construction on a fast track project to build the Tomago smelter potline

By Erisa Linsky

A smelter potline is to be constructed at Tomago, south of Newcastle. Worth around \$1.3 billion dollars, it will be one of the most sought after engineering contracts in Australia this year.

Western Pacific Construction was formed as a joint venture to tender for the project. The three interested parties are CMPS (Crooks Michell Peacock and Stewart), a Sydney based engineering consultancy; and two multi-national engineering and construction firms, the Montreal based SNC, and Fluor Daniel, Australia Ltd.

The plan is to build the potline within a record breaking 18-20 months, using a new purpose-built system with a temporary link from a headquarters in Sydney to the construction site.

In March, Western Pacific opened its Sydney office in St Leonards, and a 386 Novell network of between 40 and 50 SX terminals was installed by Starcom. The system is built around a central database on an AST server. A dual link is being placed to the Tomago site, just south of Newcastle, a distance of approximately 120 kilometres. For this link, a dedicated voice-grade leased line is used. The link is facilitated using NAC servers and MUX multiplexing. A central database is maintained at the head office site using DAT backup.

The network will be used for engineering design and project management during construction. Involved in the enterprise are hundreds of sub-contractors, an inventory of tens of thousands of parts, and about 20,000 CAD drawings.

DOWN TO EARTH

The temporary nature of the

operation calls for technology that is cost effective and disposable, though this company may remain in business if other contracts can be successfully negotiated. It is somewhat refreshing to see that on this site there is no high-tech status consciousness. It's all, quite appropriately, down to earth. The design decisions were based on speed of installation, proof of reliability, and short-term cost.

The network will be used for engineering design and project management during construction

The initial requirements were laid down by SNC which already has its own software for such projects. It then fell to Nigel Lucas, CMIPS co-ordinating engineer, to choose the type of network and supplier. This involved three proposed solutions detailing how the Tomago link could be accomplished and the possible server architecture for it. The plans were prepared by Lucas and the SNC engineers. Starcom priced them, and suggested alternative methods and equipment.

CLOSE BIDS

"The bids were close," said Lucas. "But I chose Starcom for their quality support, and since we already had them install our system at CMPS we knew what kind of expertise we were getting."

"We went with the standard voice data line because a 2 megabit link would have cost us around \$7,500 a year. In spite of the extra

speed and reliability it might have given us, it was just not worth it. The option we have chosen will cost about 90% less than that."

"This is not a transaction processing system and doesn't serve any marketing purpose. The project won't suffer unduly if the line goes down, nor is the speed of transmission critical. There are several ways of doing this link. The voice-grade data line was the best of all the available alternatives. The other area of cost savings is in our client server architecture. We only use one file server for the whole system."

"We offered an alternative design to the ones that CMPS and SNC proposed," said Gary Dickenson, managing director of Starcom. "Our plan involved using bridges instead of the relatively old fashioned multiplexing they proposed."

But the bridge solution would not have performed well without a higher bandwidth, hence a more costly leased line. The fact that the multiplexing method had been used on similar projects with success and at low cost, led to the decision in its favour.

The link uses two NACS (Novell Asynchronous Communications Servers), and 8 line MUX multiplexers. The configuration enables more of the processing to be done at the central file server, and minimal data transfer between sites.

SNC, which has managed similar projects all over the world, has installed its package, PMS, a Clipper product built on dBase III. It is supplemented by the use of Open Plan, another project management system that is used for scheduling and cost control. The PMS application generates approximately 200 screens and 300 reports.

AUSTRALIAN WORKSTATIONS

For workstations, the Australian made Deltacom clones were chosen. These came highly recommended by Starcom, and were used successfully in CMPS's own network in Chatswood. Those PCs dedicated to word processing are diskless to minimise backup problems, improve security and keep costs down. Also purchased were several Hewlett-Packard LaserJet printers and a thermal plotter. "We know this system combination will work, because our company has done it before," says Maurice Janssen, systems coordinator at WPC and a veteran of construction projects all over the world. "Though personally, I prefer to use Borland products for network linking and management. But here we are using Novell with NetWare 3.0 (probably to be upgraded to 3.11) and I am not unhappy with it."

Connecting things is so simple. We can plug a printer into a PC node and it works perfectly. We can move peripherals around without a fuss, to suit different phases of the project. We will be interested to see what 3.11 will do for us." ■

From page 99

PERFORMANCE MEASURING TOOL

LAN Manager Version 2 allows NetView to query profile data of the bridges to which it is linked. Included in this profile, along with static data describing the two token-ring adaptors on the bridge, is performance data such as frame counts (data and broadcast frames) and discarded frame counts, broken down by the reason for which frames were discarded, such as congestion, bit errors and line problems.

A simple but useful tool can be built by writing a CList issuing the LAN BRIDGE PROFILE command against each bridge linked to LAN Manager Version 2 and by logging the responses from LAN Manager on the NetView log using the MSG LOG command. Issuing this CList at intervals with the NetView EVERY command, will provide continual performance data. This is particularly useful if there are multiple LAN Manager Version 2 workstations managing extensive networks. In these cases, the performance data will reside only on the individual LAN Manager workstations.

Once the data is logged, a fourth-generation language can be used to produce reports on the performance of the bridges, which can reveal either traffic trends that the network manager can use for network tuning or abnormal error rates that might identify problem adaptors prior to failures.

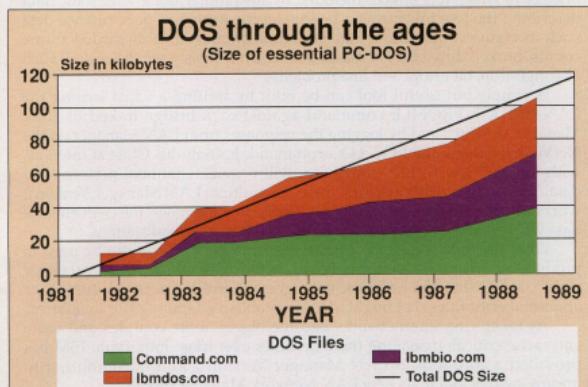
As token-ring internetworks become bigger, more complex and more enterprise critical, managing them becomes ever more important. IBM has provided a core tool in LAN Manager Version 2 and is committed to improving this tool in its new LAN Network Manager product.

In addition, in a network comprising various types of communications equipment with their associated element management systems, NetView is an excellent choice of platform to relate information intelligently from these systems to LAN information. Many vendors already have provided interfaces to NetView, and NetView provides the building blocks necessary for quickly tailoring tools to manage a unique network. ■

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The world's largest beta test



DOS 5.0 should be just around the corner! After the world's largest exercise in beta testing (with over 700 testers around the world) it should be good. That's what they'll want us to think, anyway.

Once again, it's an OEM product only, so theoretically Microsoft doesn't have to offer support to anyone in the street (or up a blind alley, either . . . Ed.) and it will only be shipped with new PCs. Thankfully, there's at least a way of getting a copy of the new version — it will be available as an UPGRADE, which means you can install it on your machine, but only if there's an existing DOS installed.

So, I wonder who'll do the support for those users who have problems? Microsoft? Osborne Computers? Pizza Hut? Insiders say Microsoft is expecting to shift 10 million copies this year (minimum), though there'll be 100 million copies of all versions of DOS in the marketplace by next year.

MORE COPIES PLEASE

Also being whispered amongst the Tasmanian oak boardrooms is the whisper Microsoft is going to get

much more vigilant about its software running on networks. It seems that now Windows 3, Winword, Excel and other Microsoft products are taking off, Bill Gates wants one full package per network user . . . site licences and blind eyes are out.

BURSTING AT THE SEAMS

And Uncle Bill is also said to be considering a slight change in Microsoft . . . like splitting it in two, with one company concentrating on systems development and support, and the other doing applications. A bit like the Texan who was visiting the northernmost US State. When he found out Alaska was bigger than his beloved lone-star state he kept complaining about the unfairness of it all, until an Alaskan said if he didn't shut up they'd cut Alaska in half and then there'd be two US States bigger than Texas.

WHY ED LEFT ASHTON-TATE

When CEO Ed Esber left Ashton-Tate last year, the rumours were legion. The Oracle can now report the real reason. AT stock had been sliding for a while, and the company had lots of trouble with non-performing products, and worse — non-appearing

products. The installed base was still good but the loyalty wasn't going to last for ever. Stock price had dropped dramatically and was around \$US12. Philippe Kahn of Borland had words with Esber and suggested a stock swap between the companies, to effectively let Borland take-over the dBase maker. At that time Borland stock was \$US17 a share. A stipulation from Kahn was that AT immediately drop the (soon to prove disastrous) lawsuit against FoxBase, and also drop all but the key AT product lines. Esber went to his board, confident they'd accept the offer and conditions.

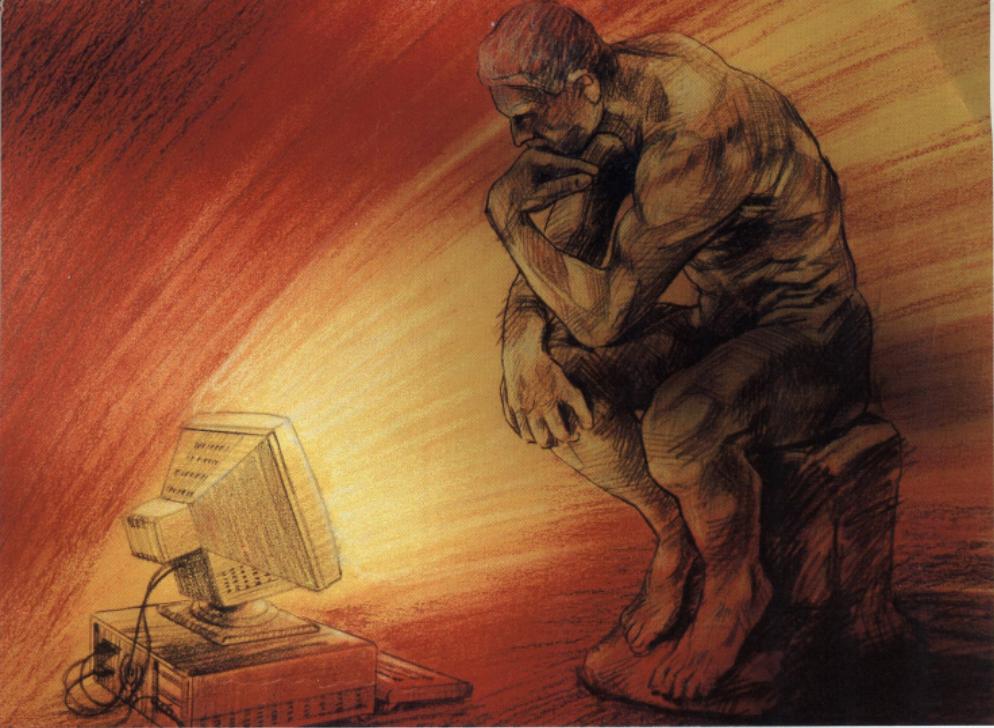
Not only did they reject his offer out of hand, but asked him to pack his bag and leave the company, pronto! Today, Borland stock is trading at over \$US50, and AT has dropped to \$US5. AT stockholders could have been ten times better off!

HI-FI THERAPY

It seems there's more than operating systems tying together the movers and shakers in this industry. A certain hi-fi shop in Chatswood, Sydney, which sells only Sony equipment is often crawling with PC personalities. One of our spies reports that on a recent Saturday morning these particular shoppers were spending as fast as they wish their PC products were moving. One who declined to be named admitted to visiting the store monthly or as soon as his Amex card healed from the prior visit.

DE QUESTION

With DOS 5.0 just around the corner, a question for you. What was different about the files for PC-DOS versions 1, 3.0 and 3.1? A clue: when do programmers "freeze" a program? (It's got something to do with time). And, anyone care to guess how big the release DOS 5.0 will be? Take a look at the graph and do your own extrapolation. ■



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